Changes for the Better

MITSUBISHI ELECTRIC

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS
SPLIT-TYPE, AIR CONDITIONERS

October 2007

No. OCH420
REVISED EDITION-A

# SERVICE MANUAL

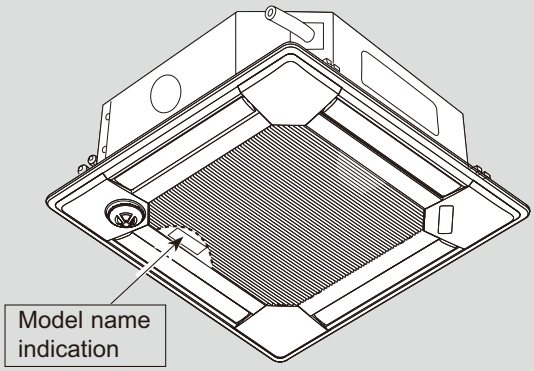
## Series PLA Ceiling Cassettes R410A

| Indoor unit [Model names] | [Service Ref.] | |
|---|---|---|
| PLA-A12BA | PLA-A12BA | PLA-A12BA1 |
| PLA-A18BA | PLA-A18BA | PLA-A18BA1 |
| PLA-A24BA | PLA-A24BA | PLA-A24BA1 |
| PLA-A30BA | PLA-A30BA | PLA-A30BA1 |
| PLA-A36BA | PLA-A36BA | PLA-A36BA1 |
| PLA-A42BA | PLA-A42BA | PLA-A42BA1 |

Revision:
- PLA-A12/18/24/30/36/42BA1 are added in REVISED EDITION-A.
- Some descriptions have been modified.

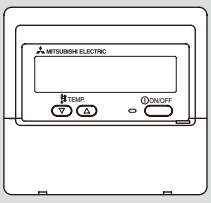
- Please void OCH420.

NOTE:
- This manual describes only service data of the indoor units.
- RoHS compliant products have <G> mark on the spec name plate.




INDOOR UNIT

WIRELESS REMOTE CONTROLLER




WIRED REMOTE CONTROLLER

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PARTS CATALOG (OCB420)

33223

Mr.SLIM™

# 1 TECHNICAL CHANGES

**PLA-A12BA → PLA-A12BA1**
**PLA-A18BA → PLA-A18BA1**
**PLA-A24BA → PLA-A24BA1**
**PLA-A30BA → PLA-A30BA1**
**PLA-A36BA → PLA-A36BA1**
**PLA-A42BA → PLA-A42BA1**

INDOOR CONTROLLER BOARD(I.B) has been changed(11. SPECIAL FUNCTION is added).

# 2 REFERENCE MANUAL

## 2-1. OUTDOOR UNIT SERVICE MANUAL

| Service Ref. | Service Manual No. |
|---|---|
| PUZ-A18/24/30/36/42NHA<br>PUZ-A18/24/30/36/42NHA-BS<br>PUY-A12/18/24/30/36/42NHA(1)<br>PUY-A12/18/24/30/36/42NHA(1)-BS | OC367 |
| PUZ-HA36NHA | OCH426<br>OCB426 |

## 2-2. TECHNICAL DATA BOOK

| Series (Outdoor unit) | Data Book No. |
|---|---|
| PUZ-A·NHA(-BS)<br>PUY-A·NHA(-BS) | OCS04 |

# 3 SAFETY PRECAUTION

## 3-1. ALWAYS OBSERVE FOR SAFTY

**Before obtaining access to terminal, all supply circuits must be disconnected.**

## 3-2. CAUTIONS RELATED TO NEW REFRIGERANT

**Cautions for units utilising refrigerant R410A**

**Use new refrigerant pipes.**

**Make sure that the inside and outside of refrigerant piping is clean and it has no contamination such as sulfur hazardous for use, oxides, dirt, shaving particles, etc.**
**In addition, use pipes with specified thickness.**

Contamination inside refrigerant piping can cause deterioration of refrigerant oil etc.

**Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing. (Leave elbow joints, etc. in their packaging.)**

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

**Use ester oil, ether oil or alkylbenzene oil (small amount) as the refrigerant oil applied to flares and flange connections.**

If large amount of mineral oil enters, that can cause deterioration of refrigerant oil etc.

**Charge refrigerant from liquid phase of gas cylinder.**

If the refrigerant is charged from gas phase, composition change may occur in refrigerant and the efficiency will be lowered.

**Do not use refrigerant other than R410A.**

If other refrigerant (R22 etc.) is used, chlorine in refrigerant can cause deterioration of refrigerant oil etc.

**Use a vacuum pump with a reverse flow check valve.**

Vacuum pump oil may flow back into refrigerant cycle and that can cause deterioration of refrigerant oil etc.

**Use the following tools specifically designed for use with R410A refrigerant.**

The following tools are necessary to use R410A refrigerant.

| Tools for R410A | |
|---|---|
| Gauge manifold | Flare tool |
| Charge hose | Size adjustment gauge |
| Gas leak detector | Vacuum pump adaptor |
| Torque wrench | Electronic refrigerant charging scale |

**Keep the tools with care.**

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

**Do not use a charging cylinder.**

If a charging cylinder is used, the composition of refrigerant will change and the efficiency will be lowered.

**Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.**

### [1] Cautions for service

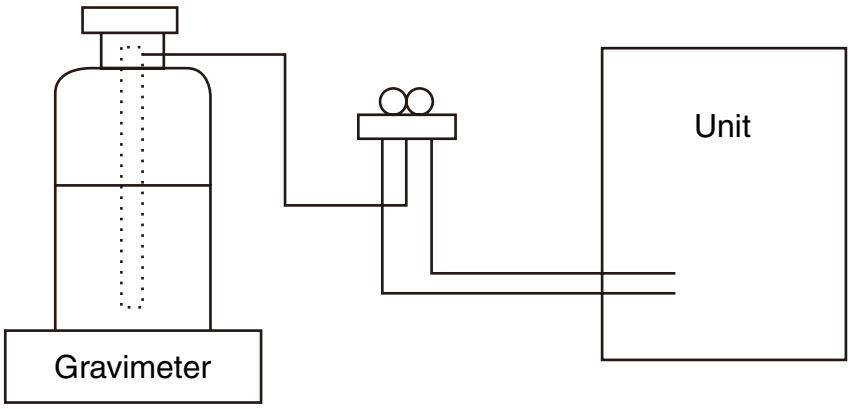
**(1) Perform service after recovering the refrigerant left in the unit completely.**
**(2) Do not release refrigerant in the air.**
**(3) After completing service, charge the cycle with specified amount of refrigerant.**
**(4) When performing service, install a filter drier simultaneously.**
**Be sure to use a filter drier for new refrigerant.**

## [2] Additional refrigerant charge

**When charging directly from cylinder**

· Check that cylinder for R410A on the market is syphon type.

· Charging should be performed with the cylinder of syphon stood vertically. (Refrigerant is charged from liquid phase.)

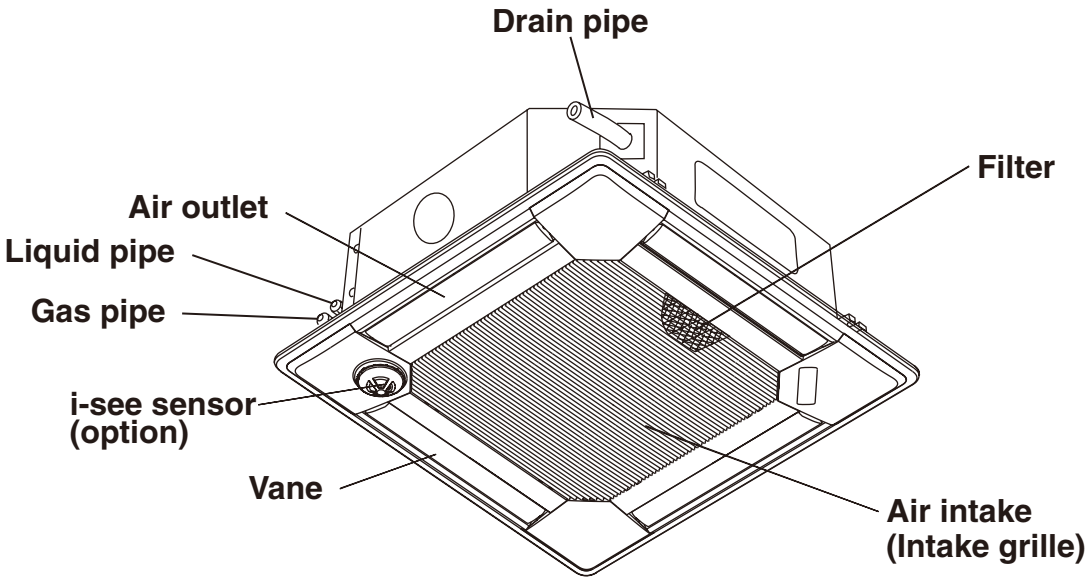



## [3] Service tools

**Use the below service tools as exclusive tools for R410A refrigerant.**

| No. | Tool name | Specifications |
|---|---|---|
| ① | Gauge manifold | ·Only for R410A |
| | | ·Use the existing fitting specifications. (UNF1/2) |
| | | ·Use high-tension side pressure of 5.3MPa·G or over. |
| ② | Charge hose | ·Only for R410A |
| | | ·Use pressure performance of 5.09MPa·G or over. |
| ③ | Electronic scale | —— |
| ④ | Gas leak detector | ·Use the detector for R134a, R407C or R410A. |
| ⑤ | Adaptor for reverse flow check | ·Attach on vacuum pump. |
| ⑥ | Refrigerant charge base | —— |
| ⑦ | Refrigerant cylinder | ·Only for R410A ·Top of cylinder (Pink)<br>·Cylinder with syphon |
| ⑧ | Refrigerant recovery equipment | —— |

# 4 PART NAMES AND FUNCTIONS



## ● Wired remote controller

### Display Section

For purposes of this explanation, all parts of the display are shown as lit. During actual operation, only the relevant items will be lit.

**Day-of-Week**
Shows the current day of the week.

**Time/Timer Display**
Shows the current time, unless the simple or Auto Off timer is set.
If the simple or Auto Off timer is set, the time to be switched off is shown.

**Identifies the current operation**
Shows the operating mode, etc.
*Multilanguage display is available.

**"Centrally Controlled" indicator**
Indicates that operation from the remote controller has been prohibited by a master controller.

**"Timer is Off" indicator**
Indicates that the timer is off.

**Temperature Setting**
Shows the target temperature.

**"Sensor" indication**
Displayed when the remote controller sensor is used.

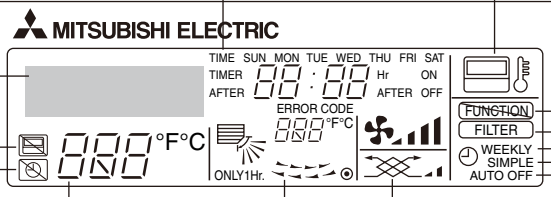
**"Locked" indicator**
Indicates that remote controller buttons have been locked.

**"Clean The Filter" indicator**
To be displayed on when it is time to clean the filter.

**Timer indicators**
The indicator comes on if the corresponding timer is set.

**Fan Speed indicator**
Shows the selected fan speed.

**Ventilation indicator**
Appears when the unit is running in Ventilation mode.




**Up/Down Air Direction indicator**
The indicator shows the direction of the outcoming airflow.

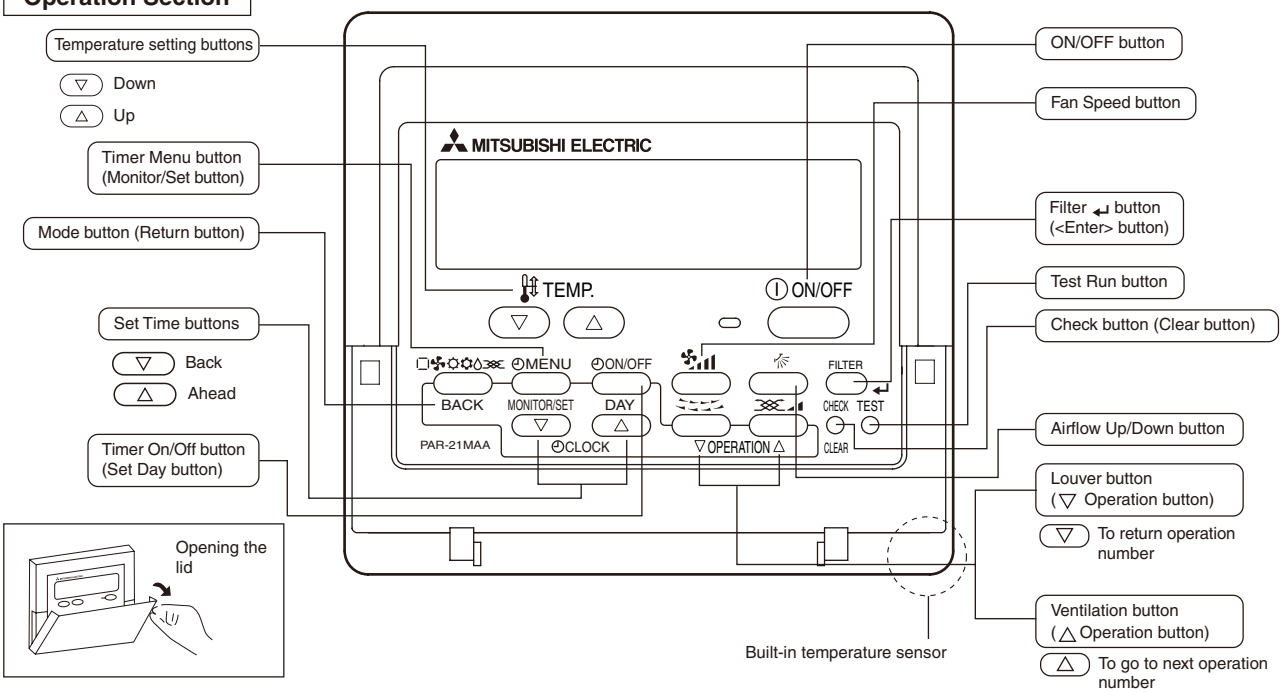
**"One Hour Only" indicator**
Displayed if the airflow is set to low or downward during COOL or DRY mode. (Operation varies according to model.)
The indicator goes off in 1 hour, when the airflow direction also changes.

**Room Temperature display**
Shows the room temperature. The room temperature display range is 46–102˚F. The display blinks if the temperature is less than 46˚F or 102˚F or more.

**Louver display**
Indicates the action of the swing louver. Does not appear if the louver is not running.

**◉ (Power On indicator)**
Indicates that the power is on.

### Operation Section

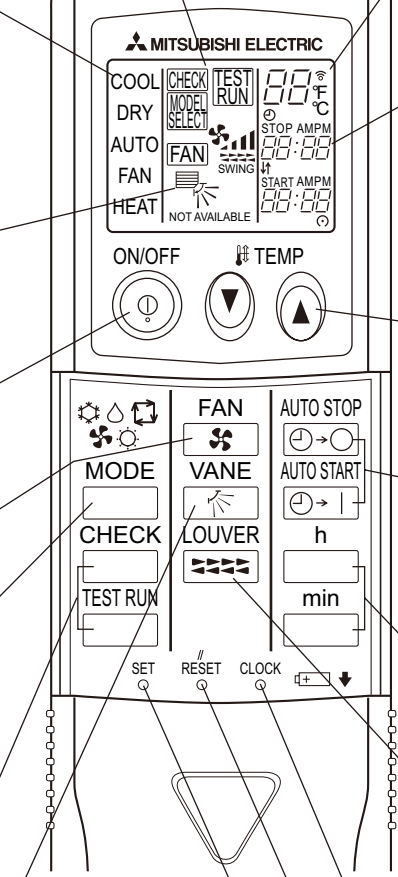






**Note:**
- "PLEASE WAIT" message
  This message is displayed for approximately 3 minutes when power is supplied to the indoor unit or when the unit is recovering from a power failure.
- "NOT AVAILABLE" message
  This message is displayed if an invalid button is pressed (to operate a function that the indoor unit does not have).
  If a single remote controller is used to operate multiple indoor units simultaneously that are different types, this message will not be displayed as far as any of the indoor units is equipped with the function.

## ● Wireless remote controller




**CHECK TEST RUN display**

Indicate that the unit is being checked or test-run.

**MODEL SELECT display**

Blinks when model is selected.

**display**

Lights up while the signal is transmitted to the indoor unit when the button is pressed.

**Temperature setting display**

Indicates the desired temperature setting which is set.

**OPERATION MODE display**

OPERATION MODE display
Indicates which operation mode is in effect.

**CLOCK display**

Displays the current time.

**TIMER display**

Displays when in timer operation or when setting timer.

**" ↓ " " ↑ " display**

Displays the order of timer operation.

**" ⏲→| " " ⏲→○ " display**

Displays whether timer is on or off.

**display**

The vertical direction of airflow is indicated.

**display**

Displays selected fan speed.

**button**

Sets any desired room temperature.

**ON/OFF button**

The unit is turned ON and OFF alternately each time the button is pressed.

**TIMER CONTROL buttons**

AUTO STOP (OFF timer): when this switch is set, the air conditioner will be automatically stopped at the preset time.
AUTO START (ON timer): when this switch is set, the air conditioner will be automatically started at the preset time.

**FAN SPEED SELECT button**

Changes the fan speed.

**MODE SELECT button**

Switches the operation mode between COOLING/DRY/FAN/HEATING and AUTO mode.

※In case the outdoor unit is cooling only type, the heating and auto mode are not available.

**"h" and "min" buttons**

Buttons used to set the "hour and minute" of the current time and timer settings.

**LOUVER button**

Changes left / right airflow direction.
(Not available for this model.)

**CHECK-TEST RUN button**

Performs an inspection check or test operation. Do not use it for normal operation.

**VANE CONTROL button**

Changes the air flow direction.

**CLOCK button**

**RESET button**

**SET button**

# 5 SPECIFICATIONS

| | | | | | |
|---|---|---|---|---|---|
| INDOOR UNIT | **Service Ref.** | | | | **PLA-A12BA, PLA-A12BA1** |
| | Power supply (phase, cycle, voltage) | | | | Single phase,60Hz, 208/230V |
| | | Max. Fuse Size | | A | 15 |
| | | Min. Circuit Ampacity | | A | 1 |
| | External finish (Panel) | | | | Munsell 6.4Y 8.9/0.4 |
| | Heat exchanger | | | | Plate fin coil |
| | Fan | Fan (drive) × No. | | | Turbo fan (direct) × 1 |
| | | Fan motor output | | kW | 0.05 |
| | | Fan motor | | F.L.A. | 0.51 |
| | | Airflow (Low-Medium2-Medium1-High) | | m³/min(CFM) | Dry: 11-12-13-15(390-420-460-530) |
| | | | | | Wet: 10-11-12-14(350-390-420-490) |
| | | External static pressure | | Pa(mmAq) | 0(direct blow) |
| | Booster heater | | | kW | – |
| | Operation control & Thermostat | | | | Remote controller & built-in |
| | Noise level (Low-Medium2-Medium1-High) | | | dB | 27-28-29-31 |
| | Field drain pipe O.D. | | | mm(in.) | 32 (1-1/4) |
| | Dimensions | | W | mm(in.) | UNIT : 840 (33-1/16) PANEL : 950 (37-3/8) |
| | | | D | mm(in.) | UNIT : 840 (33-1/16) PANEL : 950 (37-3/8) |
| | | | H | mm(in.) | UNIT : 258 (10-3/16) PANEL : 35 (1-3/8) |
| | Weight | | | kg(lbs) | UNIT : 22 (49) PANEL: 6 (13) |

| | | | | | |
|---|---|---|---|---|---|
| INDOOR UNIT | **Service Ref.** | | | | **PLA-A18BA, PLA-A18BA1** |
| | Power supply (phase, cycle, voltage) | | | | Single phase,60Hz, 208/230V |
| | | Max. Fuse Size | | A | 15 |
| | | Min. Circuit Ampacity | | A | 1 |
| | External finish (Panel) | | | | Munsell 6.4Y 8.9/0.4 |
| | Heat exchanger | | | | Plate fin coil |
| | Fan | Fan (drive) × No. | | | Turbo fan (direct) × 1 |
| | | Fan motor output | | kW | 0.05 |
| | | Fan motor | | F.L.A. | 0.51 |
| | | Airflow (Low-Medium2-Medium1-High) | | m³/min(CFM) | Dry: 12-14-16-18(420-490-570-640) |
| | | | | | Wet:11-13-15-17(390-460-530-600) |
| | | External static pressure | | Pa(mmAq) | 0(direct blow) |
| | Booster heater | | | kW | – |
| | Operation control & Thermostat | | | | Remote controller & built-in |
| | Noise level (Low-Medium2-Medium1-High) | | | dB | 28-29-31-32 |
| | Field drain pipe O.D. | | | mm(in.) | 32 (1-1/4) |
| | Dimensions | | W | mm(in.) | UNIT : 840 (33-1/16) PANEL : 950 (37-3/8) |
| | | | D | mm(in.) | UNIT : 840 (33-1/16) PANEL : 950 (37-3/8) |
| | | | H | mm(in.) | UNIT : 258 (10-3/16) PANEL : 35 (1-3/8) |
| | Weight | | | kg(lbs) | UNIT : 22 (49) PANEL: 6 (13) |

| | | | | | |
|---|---|---|---|---|---|
| INDOOR UNIT | **Service Ref.** | | | | **PLA-A24BA, PLA-A24BA1** |
| | Power supply (phase, cycle, voltage) | | | | Single phase,60Hz, 208/230V |
| | | Max. Fuse Size | | A | 15 |
| | | Min. Circuit Ampacity | | A | 1 |
| | External finish (Panel) | | | | Munsell 6.4Y 8.9/0.4 |
| | Heat exchanger | | | | Plate fin coil |
| | Fan | Fan (drive) × No. | | | Turbo fan (direct) × 1 |
| | | Fan motor output | | kW | 0.05 |
| | | Fan motor | | F.L.A. | 0.51 |
| | | Airflow (Low-Medium2-Medium1-High) | | m³/min(CFM) | Dry: 12-14-16-18(420-490-570-640) |
| | | | | | Wet: 11-13-15-17(390-460-530-600) |
| | | External static pressure | | Pa(mmAq) | 0(direct blow) |
| | Booster heater | | | kW | – |
| | Operation control & Thermostat | | | | Remote controller & built-in |
| | Noise level (Low-Medium2-Medium1-High) | | | dB | 28-29-31-32 |
| | Field drain pipe O.D. | | | mm(in.) | 32(1-1/4) |
| | Dimensions | | W | mm(in.) | UNIT : 840 (33-1/16) PANEL : 950 (37-3/8) |
| | | | D | mm(in.) | UNIT : 840 (33-1/16) PANEL : 950 (37-3/8) |
| | | | H | mm(in.) | UNIT : 258 (10-3/16) PANEL : 35 (1-3/8) |
| | Weight | | | kg(lbs) | UNIT : 23 (51) PANEL: 6 (13) |

| | | | | | |
|---|---|---|---|---|---|
| INDOOR UNIT | **Service Ref.** | | | | **PLA-A30BA, PLA-A30BA1** |
| | Power supply (phase, cycle, voltage) | | | | Single phase,60Hz, 208/230V |
| | | Max. Fuse Size | | A | 15 |
| | | Min. Circuit Ampacity | | A | 1 |
| | External finish (Panel) | | | | Munsell 6.4Y 8.9/0.4 |
| | Heat exchanger | | | | Plate fin coil |
| | Fan | Fan (drive) × No. | | | Turbo fan (direct) × 1 |
| | | Fan motor output | | kW | 0.05 |
| | | Fan motor | | F.L.A. | 0.51 |
| | | Airflow (Low-Medium2-Medium1-High) | | m³/min(CFM) | Dry: 14-16-18-21(490-570-640-740) |
| | | | | | Wet: 13-15-17-20(460-530-600-710) |
| | | External static pressure | | Pa(mmAq) | 0(direct blow) |
| | Booster heater | | | kW | – |
| | Operation control & Thermostat | | | | Remote controller & built-in |
| | Noise level (Low-Medium2-Medium1-High) | | | dB | 28-30-32-34 |
| | Field drain pipe O.D. | | | mm(in.) | 32(1-1/4) |
| | Dimensions | | W | mm(in.) | UNIT : 840 (33-1/16) PANEL : 950 (37-3/8) |
| | | | D | mm(in.) | UNIT : 840 (33-1/16) PANEL : 950 (37-3/8) |
| | | | H | mm(in.) | UNIT : 258 (10-3/16) PANEL : 35 (1-3/8) |
| | Weight | | | kg(lbs) | UNIT : 23 (51) PANEL: 6 (13) |

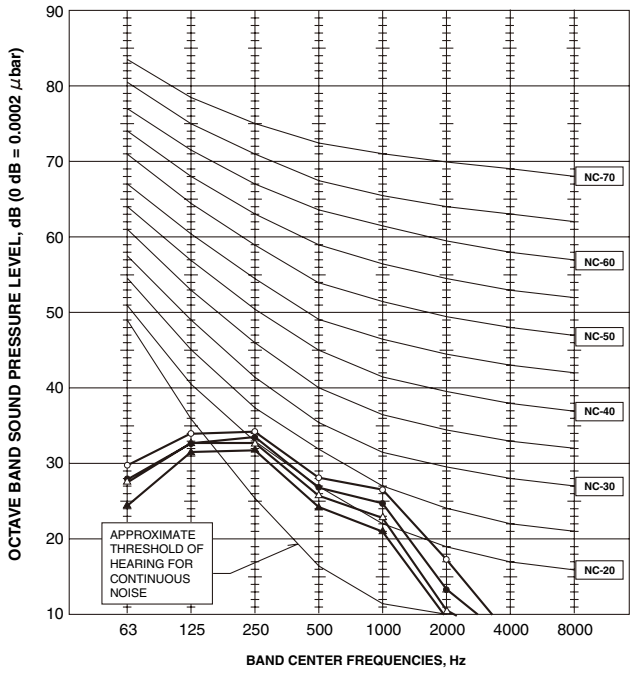
| | | | | | |
|---|---|---|---|---|---|
| INDOOR UNIT | **Service Ref.** | | | | **PLA-A36BA, PLA-A36BA1** |
| | Power supply (phase, cycle, voltage) | | | | Single phase,60Hz, 208/230V |
| | | Max. Fuse Size | | A | 15 |
| | | Min. Circuit Ampacity | | A | 2 |
| | External finish (Panel) | | | | Munsell 6.4Y 8.9/0.4 |
| | Heat exchanger | | | | Plate fin coil |
| | Fan | Fan (drive) × No. | | | Turbo fan (direct) × 1 |
| | | Fan motor output | | kW | 0.12 |
| | | Fan motor | | F.L.A. | 1.00 |
| | | Airflow (Low-Medium2-Medium1-High) | | m³/min(CFM) | Dry: 20-23-26-30(710-810-920-1060) |
| | | | | | Wet: 19-22-25-29(670-770-880-1030) |
| | | External static pressure | | Pa(mmAq) | 0(direct blow) |
| | Booster heater | | | kW | – |
| | Operation control & Thermostat | | | | Remote controller & built-in |
| | Noise level (Low-Medium2-Medium1-High) | | | dB | 32-34-37-40 |
| | Field drain pipe O.D. | | | mm(in.) | 32(1-4) |
| | Dimensions | | W | mm(in.) | UNIT : 840 (33-1/16) PANEL : 950 (37-3/8) |
| | | | D | mm(in.) | UNIT : 840 (33-1/16) PANEL : 950 (37-3/8) |
| | | | H | mm(in.) | UNIT : 298 (11-3/4) PANEL : 35 (1-3/8) |
| | Weight | | | kg(lbs) | UNIT : 25 (55) PANEL : 6 (13) |

| | | | | | |
|---|---|---|---|---|---|
| INDOOR UNIT | **Service Ref.** | | | | **PLA-A42BA, PLA-A42BA1** |
| | Power supply (phase, cycle, voltage) | | | | Single phase,60Hz, 208/230V |
| | | Max. Fuse Size | | A | 15 |
| | | Min. Circuit Ampacity | | A | 2 |
| | External finish (Panel) | | | | Munsell 6.4Y 8.9/0.4 |
| | Heat exchanger | | | | Plate fin coil |
| | Fan | Fan (drive) o No. | | | Turbo fan (direct) × 1 |
| | | Fan motor output | | kW | 0.12 |
| | | Fan motor | | F.L.A. | 1.00 |
| | | Airflow (Low-Medium2-Medium1-High) | | m³/min(CFM) | Dry: 22-25-28-31(780-880-990-1090) |
| | | | | | Wet: 21-24-27-30(740-850-950-1060) |
| | | External static pressure | | Pa(mmAq) | 0(direct blow) |
| | Booster heater | | | kW | – |
| | Operation control & Thermostat | | | | Remote controller & built-in |
| | Noise level (Low-Medium2-Medium1-High) | | | dB | 34-36-39-41 |
| | Field drain pipe O.D. | | | mm(in.) | 32(1-1/4) |
| | Dimensions | | W | mm(in.) | UNIT : 840 (33-1/16) PANEL : 950 (37-3/8) |
| | | | D | mm(in.) | UNIT : 840 (33-1/16) PANEL : 950 (37-3/8) |
| | | | H | mm(in.) | UNIT : 298 (11-3/4) PANEL : 35 (1-3/8) |
| | Weight | | | kg(lbs) | UNIT : 25 (55) PANEL : 6 (13) |

# 6 NOISE CRITERION CURVES

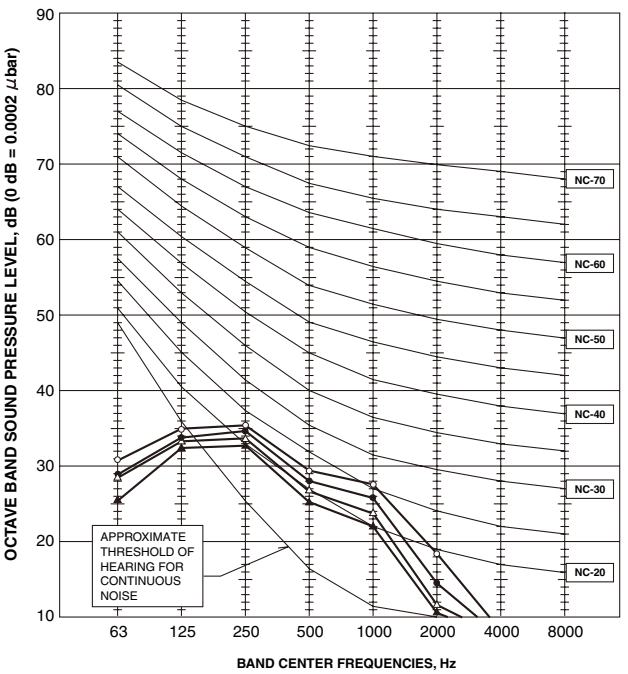
## PLA-A12BA
## PLA-A12BA1

| NOTCH | SPL(dB) | LINE |
|---|---|---|
| High | 31 | |
| Medium1 | 29 | |
| Medium2 | 28 | |
| Low | 27 | |



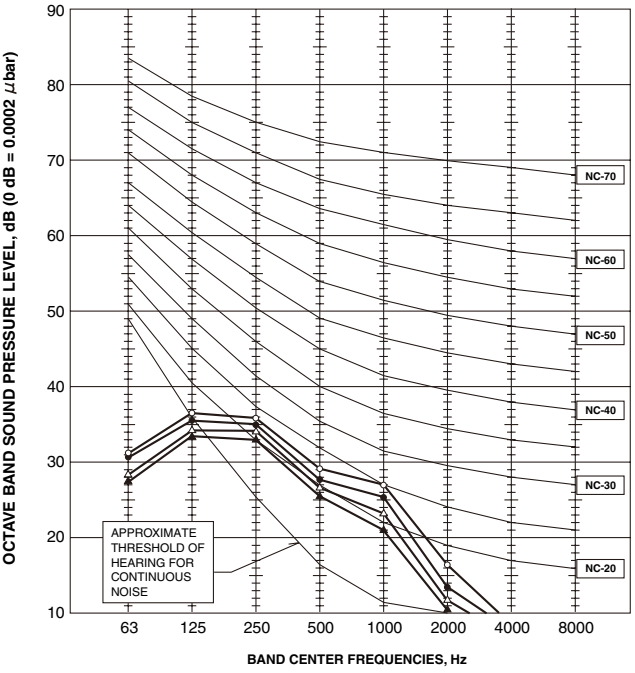

## PLA-A18BA
## PLA-A18BA1

| NOTCH | SPL(dB) | LINE |
|---|---|---|
| High | 32 | |
| Medium1 | 31 | |
| Medium2 | 29 | |
| Low | 28 | |



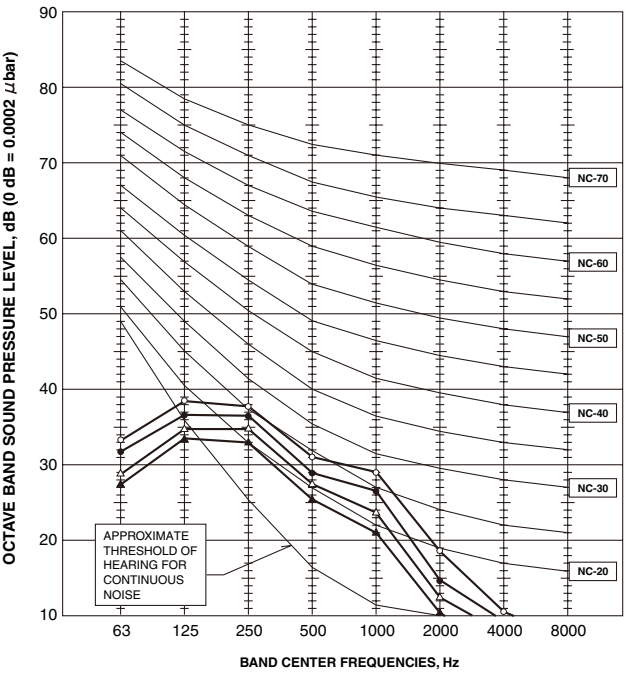

## PLA-A24BA
## PLA-A24BA1

| NOTCH | SPL(dB) | LINE |
|---|---|---|
| High | 32 | |
| Medium1 | 31 | |
| Medium2 | 29 | |
| Low | 28 | |



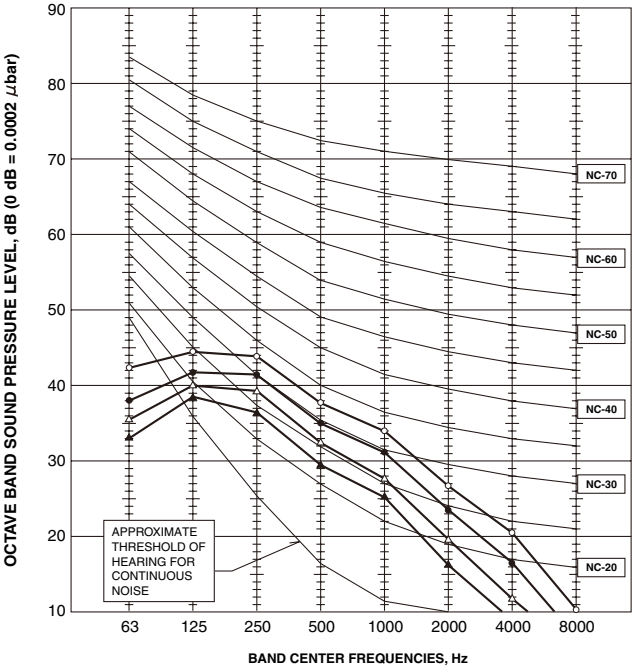

## PLA-A30BA
## PLA-A30BA1

| NOTCH | SPL(dB) | LINE |
|---|---|---|
| High | 34 | |
| Medium1 | 32 | |
| Medium2 | 30 | |
| Low | 28 | |



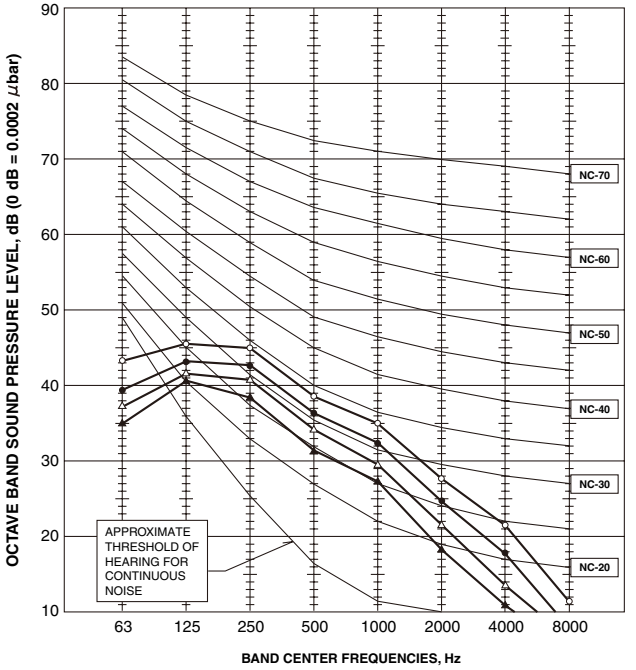
## PLA-A36BA
## PLA-A36BA1

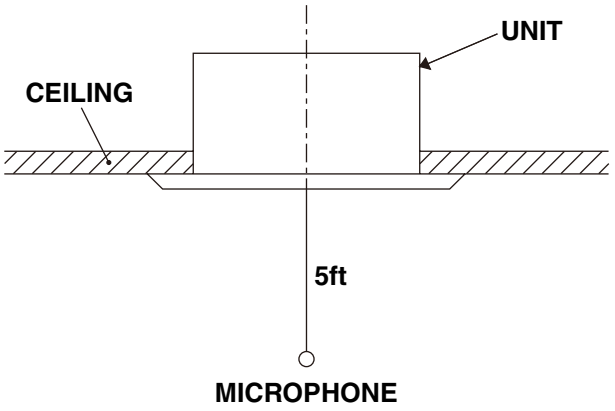
| NOTCH | SPL(dB) | LINE |
|---|---|---|
| High | 40 | |
| Medium1 | 37 | |
| Medium2 | 34 | |
| Low | 32 | |




## PLA-A42BA
## PLA-A42BA1

| NOTCH | SPL(dB) | LINE |
|---|---|---|
| High | 41 | |
| Medium1 | 39 | |
| Medium2 | 36 | |
| Low | 34 | |



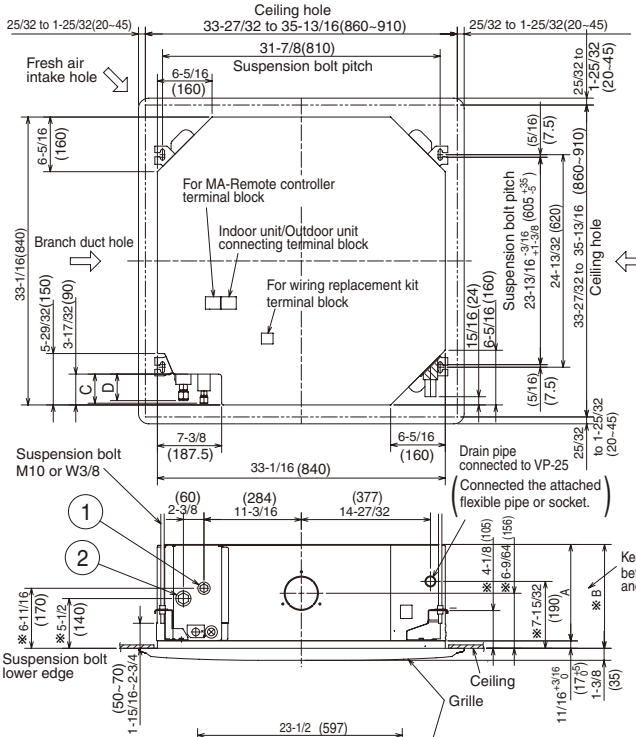



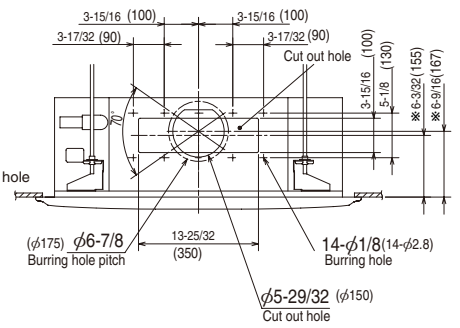
# 7 OUTLINES AND DIMENSIONS

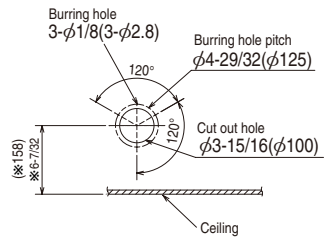
## INDOOR UNIT

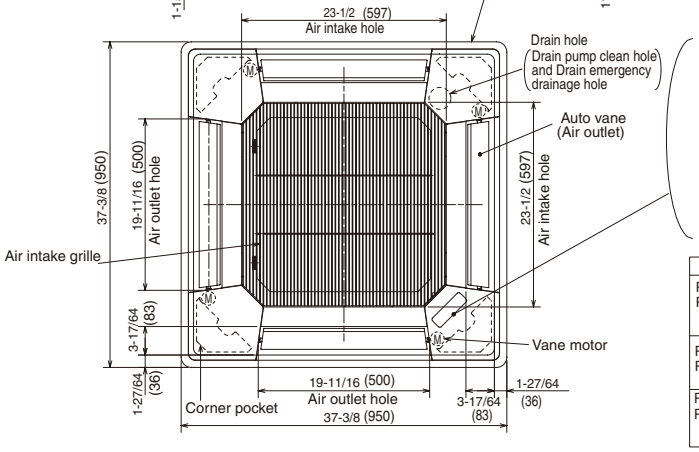
**PLA-A12BA PLA-A18BA PLA-A24BA PLA-A30BA PLA-A36BA PLA-A42BA**
**PLA-A12BA1 PLA-A18BA1 PLA-A24BA1 PLA-A30BA1 PLA-A36BA1 PLA-A42BA1**

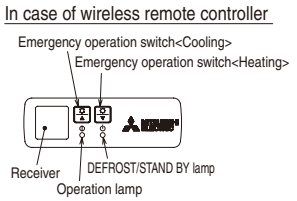
**Unit : inch(mm)**



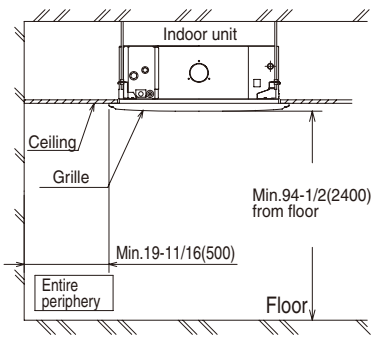






| Models | ① | ② | A | B | C | D |
|---|---|---|---|---|---|---|
| PLA-A12BA<br>PLA-A18BA | Refrigerant pipe<br>····φ6.35<br>Flared connection<br>····1/4 inch | Refrigerant pipe<br>····φ12.7<br>Flared connection<br>····1/2 inch | 9-1/2 (241) | 10-3/16 (258) | 3-5/32 (80) | 2-29/32 (74) |
| PLA-A24BA<br>PLA-A30BA | Refrigerant pipe<br>····φ9.52<br>Flared connection<br>····3/8 inch | Refrigerant pipe<br>····φ15.88<br>Flared connection<br>····5/8 inch | 11-1/16 (281) | 11-3/4 (298) | 3-11/32 (85) | 3-1/32 (77) |
| PLA-A36BA<br>PLA-A42BA | | | | | | |




Note1. As for drain pipe, please use VP-25(O.D. φ1-1/4(φ32) PVC TUBE).
Drain pump is included.
Max. liftng height is 70-7/18(850mm) from the ceiling.
2. As for suspension bolt, please use M10 or W3/8.(Procured at local site)
3. Electrical box may be removed for the service purpose.
Make sure to slack the electrical wire little bit for control/power wires connection.
4. The height of the indoor unit is able to be adjusted with the grille attached.
5. For the installation of the optional high efficiency filter or optional multi-functional casement.
1) Add 5-5/16(135mm)to the dimensions ※ marked on the figure.
2) The optional high efficiency filter becomes optional multi-functional casement and concomitant use.
6. When installing the branch ducts, be sure to insulate adequately.
Otherwise condensation and dripping may occur.
(It becomes the cause of dew drops/water dew.)
7. As for necessary installation/service space, please refer to the left figure.

# 8 WIRING DIAGRAM

## INDOOR UNIT
## PLA-A12BA PLA-A18BA PLA-A24BA PLA-A30BA PLA-A36BA PLA-A42BA

[LEGEND]

| SYMBOL | NAME |
|---|---|
| I.B | INDOOR CONTROLLER BOARD |
| CN2L | CONNECTOR (LOSSNAY) |
| CN32 | CONNECTOR (REMOTE SWITCH) |
| CN41 | CONNECTOR (HA TERMINAL-A) |
| CN51 | CONNECTOR (CENTRALLY CONTROL) |
| DSA | SURGE ABSORBER |
| FUSE | FUSE (T6.3AL250V) |
| LED1 | POWER SUPPLY (I.B) |
| LED2 | POWER SUPPLY (R.B) |
| LED3 | TRANSMISSION (INDOOR-OUTDOOR) |
| SW1 | SWITCH (MODEL SELECTION) ※See table 1 |
| SW2 | SWITCH (CAPACITY CODE) ※See table 2 |
| SWE | CONNECTOR (EMERGENCY OPERATION) |
| X1 | RELAY (DRAIN PUMP) |
| ZNR01,02 | VARISTOR |
| DP | DRAIN-UP MACHINE |
| FS | DRAIN FLOAT SWITCH |

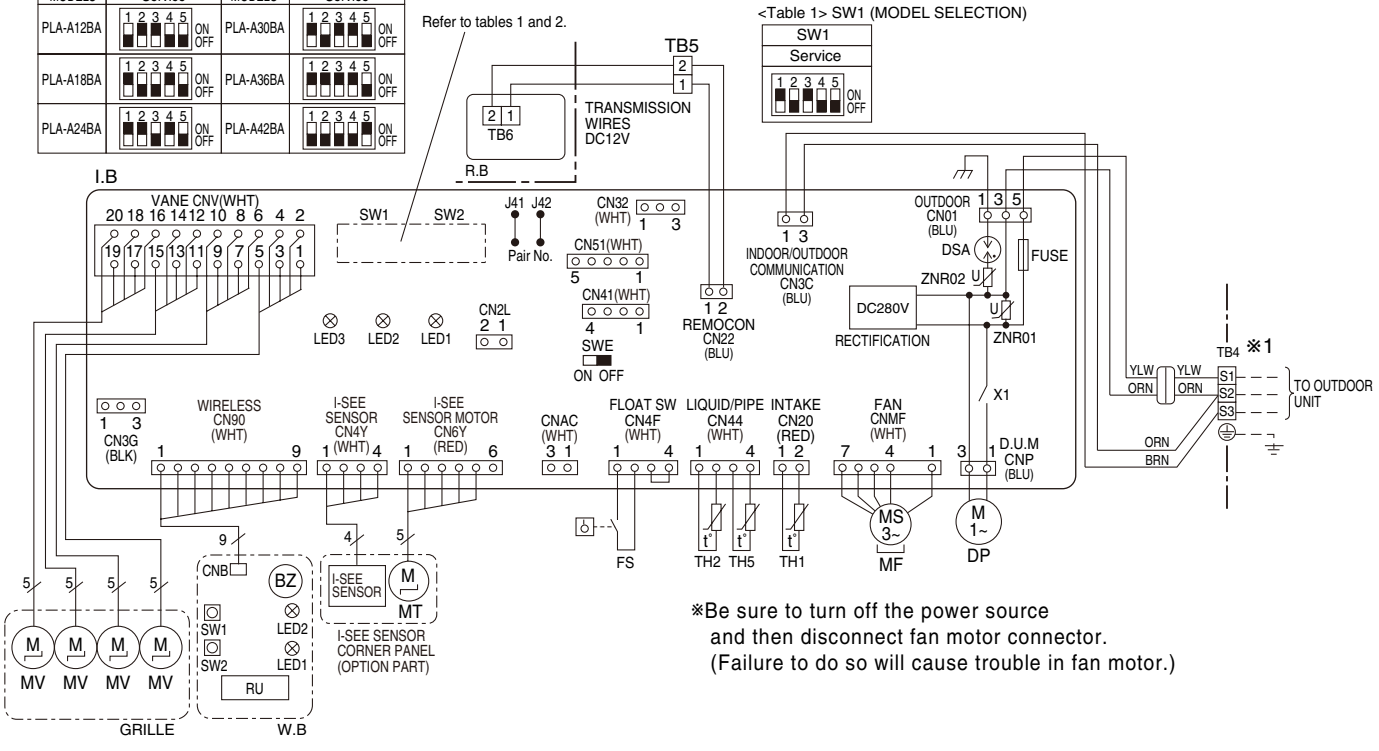
| SYMBOL | NAME |
|---|---|
| MF | FAN MOTOR |
| MV | VANE MOTOR |
| TB4 | TERMINAL BLOCK (INDOOR/OUTDOOR CONNECTING LINE) |
| TB5,TB6 | TERMINAL BLOCK (REMOTE CONTROLLER TRANSMISSION LINE) |
| TH1 | ROOM TEMP. THERMISTOR (0°C / 15kΩ, 25°C / 5. 4kΩ DETECT) |
| TH2 | PIPE TEMP. THERMISTOR/LIQUID (0°C / 15kΩ, 25°C / 5. 4kΩ DETECT) |
| TH5 | COND. / EVA. TEMP. THERMISTOR (0°C / 15kΩ, 25°C / 5. 4kΩ DETECT) |
| OPTION PART | |
| W.B | PCB FOR WIRELESS REMOTE CONTROLLER |
| BZ | BUZZER |
| LED1 | LED (OPERATION INDICATION : GREEN) |
| LED2 | LED (PREPARATION FOR HEATING : ORANGE) |
| RU | RECEIVING UNIT |
| SW1 | EMERGENCY OPERATION (HEAT / DOWN) |
| SW2 | EMERGENCY OPERATION (COOL / UP) |

<Table 2> SW2 (CAPACITY CODE)

| SW2 | | | |
|---|---|---|---|
| MODELS | Service | MODELS | Service |
| PLA-A12BA | ON OFF | PLA-A30BA | ON OFF |
| PLA-A18BA | ON OFF | PLA-A36BA | ON OFF |
| PLA-A24BA | ON OFF | PLA-A42BA | ON OFF |

<Table 1> SW1 (MODEL SELECTION)

| SW1 |
|---|
| Service |
| ON OFF |




※Be sure to turn off the power source and then disconnect fan motor connector. (Failure to do so will cause trouble in fan motor.)

Notes: 1. Symbols used in wiring diagram above are, ○○○ :Connector, □□□ :Terminal block.
2. Indoor and outdoor connecting wires have polarities, make sure to match terminal numbers (S1, S2, S3) for correct wirings.
3. Since the outdoor side electric wiring may change, be sure to check the outdoor unit electric wiring for servicing.

※1.Use copper supply wires.

[Self-diagnosis]
1.For details on how to operate self-diagnosis with the wireless remote control,refer to the technical manuals etc.
2.For the wired remote control:When you quickly press twice the CHECK switch on the remote control, the unit begins self-diagnosis, and Check Codes generated in the past appear on the display.

## INDOOR UNIT

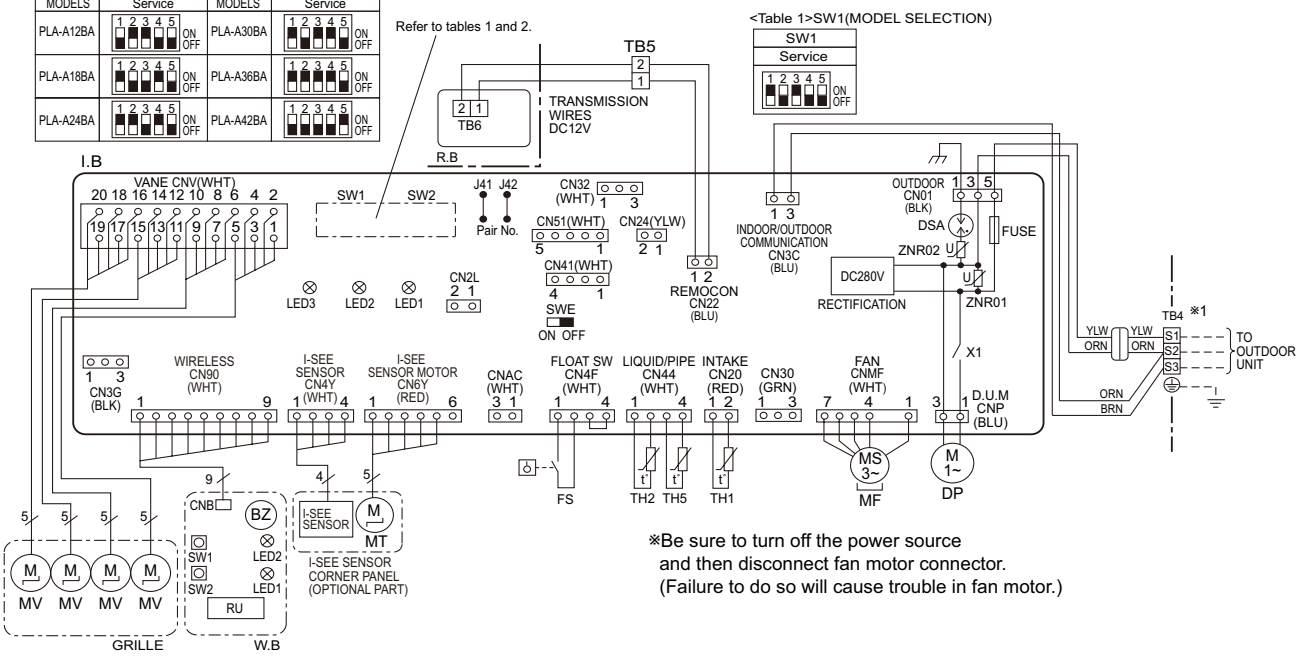
## PLA-A12BA1 PLA-A18BA1 PLA-A24BA1 PLA-A30BA1 PLA-A36BA1 PLA-A42BA1

[LEGEND]

| SYMBOL | NAME | SYMBOL | NAME |
|---|---|---|---|
| I.B | INDOOR CONTROLLER BOARD | MF | FAN MOTOR |
| CN2L | CONNECTOR (LOSSNAY) | MV | VANE MOTOR |
| CN24 | CONNECTOR<BACK-UP HEATING> | TB4 | TERMINAL BLOCK (INDOOR/OUTDOOR CONNECTING LINE) |
| CN30 | CONNECTOR<LLC> | TB5,TB6 | TERMINAL BLOCK (REMOTE CONTROLLER TRANSMISSION LINE) |
| CN32 | CONNECTOR (REMOTE SWITCH) | | |
| CN41 | CONNECTOR (HA TERMINAL-A) | TH1 | ROOM TEMP. THERMISTOR (0˚C/ 15kΩ, 25˚C / 5.4kΩ DETECT) |
| CN51 | CONNECTOR (CENTRALLY CONTROL) | | |
| DSA | SURGE ABSORBER | TH2 | PIPE TEMP. THERMISTOR/LIQUID (0˚C/ 15kΩ, 25˚C/ 5.4kΩ DETECT) |
| FUSE | FUSE (T6.3AL250V) | | |
| LED1 | POWER SUPPLY (I.B) | TH5 | COND. / EVA. TEMP. THERMISTOR (0˚C/ 15kΩ, 25˚C/ 5.4kΩ DETECT) |
| LED2 | POWER SUPPLY (R.B) | | |
| LED3 | TRANSMISSION (INDOOR-OUTDOOR) | OPTION PART | |
| SW1 | SWITCH (MODEL SELECTION) ※See table 1. | W.B | PCB FOR WIRELESS REMOTE CONTROLLER |
| SW2 | SWITCH (CAPACITY CODE) ※See table 2. | BZ | BUZZER |
| SWE | CONNECTOR (EMERGENCY OPERATION) | LED1 | LED (OPERATION INDICATION : GREEN) |
| X1 | RELAY (DRAIN PUMP) | LED2 | LED (PREPARATION FOR HEATING : ORANGE) |
| ZNR01,02 | VARISTOR | RU | RECEIVING UNIT |
| DP | DRAIN-UP MACHINE | SW1 | EMERGENCY OPERATION (HEAT / DOWN) |
| FS | DRAIN FLOAT SWITCH | SW2 | EMERGENCY OPERATION (COOL / UP) |

<Table 2>SW2(CAPACITY CODE)

| SW2 | | | |
|---|---|---|---|
| MODELS | Service | MODELS | Service |
| PLA-A12BA | 1 2 3 4 5 ON OFF | PLA-A30BA | 1 2 3 4 5 ON OFF |
| PLA-A18BA | 1 2 3 4 5 ON OFF | PLA-A36BA | 1 2 3 4 5 ON OFF |
| PLA-A24BA | 1 2 3 4 5 ON OFF | PLA-A42BA | 1 2 3 4 5 ON OFF |




※Be sure to turn off the power source and then disconnect fan motor connector. (Failure to do so will cause trouble in fan motor.)

Notes: 1. Symbols used in wiring diagram above are, ○○○ : Connector, □□□ : Terminal block.
2. Indoor and outdoor connecting wires have polarities, make sure to match terminal numbers (S1, S2, S3) for correct wiring.
3. Since the outdoor side electric wiring may change, be sure to check the outdoor unit electric wiring for servicing.

※1.Use copper supply wires.

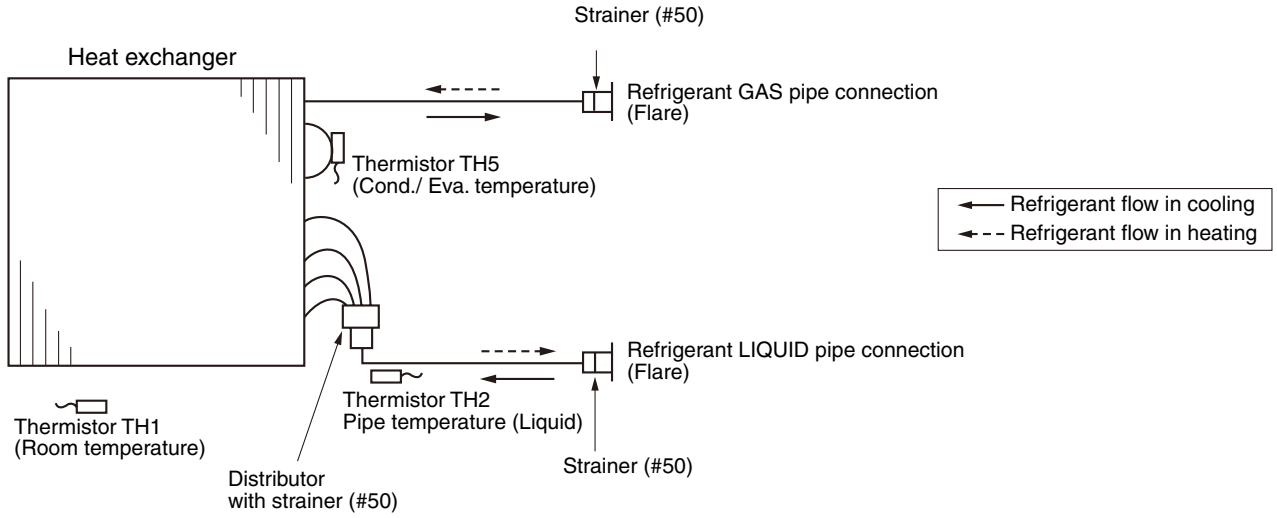
[Self-diagnosis]

1.For details on how to operate self-diagnosis with the wireless remote control, refer to the technical manuals etc.

2.For the wired remote control:When you quickly press twice the CHECK switch on the remote control, the unit begins self-diagnosis, and Check Codes generated in the past appear on the display.

# 9 REFRIGERANT SYSTEM DIAGRAM

**PLA-A12BA PLA-A18BA PLA-A24BA PLA-A30BA PLA-A36BA PLA-A42BA**
**PLA-A12BA$_1$ PLA-A18BA$_1$ PLA-A24BA$_1$ PLA-A30BA$_1$ PLA-A36BA$_1$ PLA-A42BA$_1$**



# 10 TROUBLESHOOTING

## 10-1. TROUBLESHOOTING

**<Error code display by self-diagnosis and actions to be taken for service (summary)>**

Present and past error codes are logged and displayed on the wired remote controller or controller board of outdoor unit. Actions to be taken for service and the trouble reoccurrence at field are summarized in the table below. Check the contents below before investigating details.

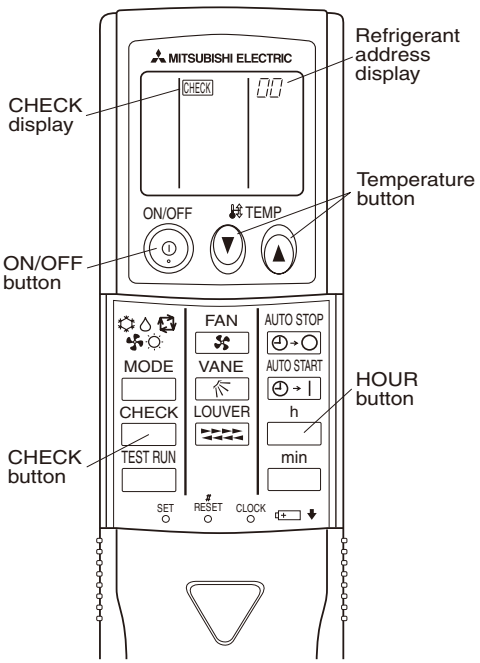
| Unit conditions at service | Error code | Actions to be taken for service (summary) |
|---|---|---|
| The trouble is reoccurring. | Displayed | Judge what is wrong and take a corrective action according to “SELF-DIAGNOSIS ACTION TABLE” (10-3). |
| | Not displayed | Identify the cause of the trouble and take a corrective action according to “TROUBLESHOOTING BY INFERIOR PHENOMENA” (10-4). |
| The trouble is not reoccurring. | Logged | ①Consider the temporary defects such as the work of protection devices in the refrigerant circuit including compressor, poor connection of wiring, noise and etc. Re-check the symptom, and check the installation environment, refrigerant amount, weather when the trouble occurred, and wiring related.<br>②Reset error code logs and restart the unit after finishing service.<br>③There is no abnormality in electrical components, controller boards, and remote controller. |
| | Not logged | ①Recheck the abnormal symptom.<br>②Identify the cause of the trouble and take a corrective action according to “TROUBLESHOOTING BY INFERIOR PHENOMENA” (10-4).<br>③Continue to operate unit for the time being if the cause is not ascertained.<br>④There is no abnormality in electrical components, controller boards, remote controller etc. |

## 10-2. MALFUNCTION-DIAGNOSIS METHOD BY REMOTE CONTROLLER

**<In case of trouble during operation>**

When a malfunction occurs to air conditioner, both indoor unit and outdoor unit will stop and operation lamp blinks to inform unusual stop.

**<Malfunction-diagnosis method at maintenance service>**




**[Procedure]**

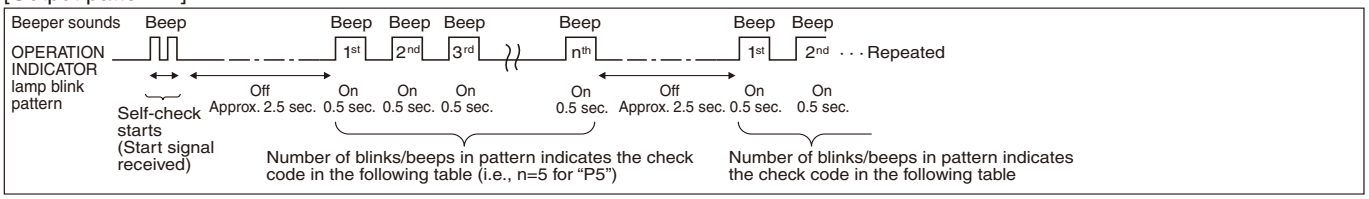
1. Press the CHECK button twice.
   - "CHECK" lights, and refrigerant address "00" blinks.
   - Check that the remote controller's display has stopped before continuing.
2. Press the temperature buttons.
   - Select the refrigerant address of the indoor unit for the self-diagnosis.

   Note: Set refrigerant address using the outdoor unit's DIP switch (SW1). (For more information, see the outdoor unit installation manual.)
3. Point the remote controller at the sensor on the indoor unit and press the HOUR button.
   - If an air conditioner error occurs, the indoor unit's sensor emits an intermittent buzzer sound, the operation lamp blinks, and the error code is output. (It takes 3 seconds at most for error code to appear.)
4. Point the remote controller at the sensor on the indoor unit and press the ON/OFF button.
   - The check mode is cancelled.

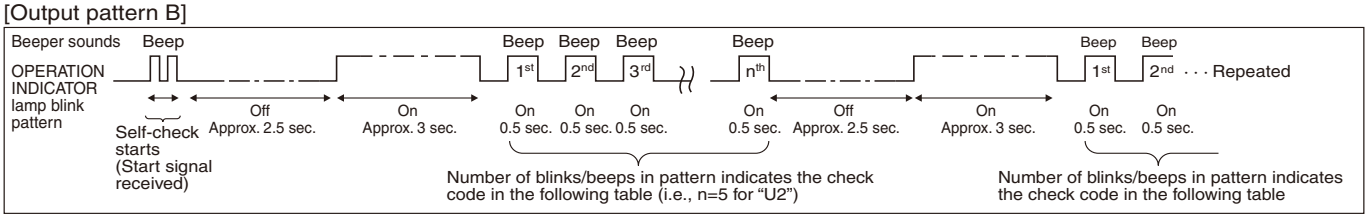
To be continued to the next page.

• Refer to the following tables for details on the check codes.

[Output pattern A]


Beeper sounds
Beep
Beep Beep Beep Beep Beep Beep
OPERATION INDICATOR lamp blink pattern
1st 2nd 3rd nth 1st 2nd · · · Repeated
Off Approx. 2.5 sec.
On 0.5 sec.
Off Approx. 2.5 sec.
Self-check starts (Start signal received)
Number of blinks/beeps in pattern indicates the check code in the following table (i.e., n=5 for "P5")
Number of blinks/beeps in pattern indicates the check code in the following table

[Output pattern B]


Beeper sounds
Beep
Beep Beep Beep Beep Beep Beep
OPERATION INDICATOR lamp blink pattern
1st 2nd 3rd nth 1st 2nd · · · Repeated
Off Approx. 2.5 sec.
On Approx. 3 sec.
On 0.5 sec.
Off Approx. 2.5 sec.
On Approx. 3 sec.
Self-check starts (Start signal received)
Number of blinks/beeps in pattern indicates the check code in the following table (i.e., n=5 for "U2")
Number of blinks/beeps in pattern indicates the check code in the following table

[Output pattern A] Errors detected by indoor unit

| Wireless remote controller<br>Beeper sounds/OPERATION INDICATOR lamp blinks (Number of times) | Wired remote controller<br>① Check code | Symptom | Remark |
|---|---|---|---|
| 1 | P1 | Intake sensor error | ——— |
| 2 | P2 | Pipe (TH2) sensor error | |
| | P9 | Pipe (TH5) sensor error | |
| 3 | E6,E7 | Indoor/outdoor unit communication error | |
| 4 | P4 | Float switch connector open | |
| 5 | P5 | Drain pump error | |
| | PA | Forced compressor stop(due to water leakage abnormality) | |
| 6 | P6 | Freezing/Overheating protection operation | |
| 7 | EE | Communication error between indoor and outdoor units | |
| 8 | P8 | Pipe temperature error | |
| 9 | E4, E5 | Remote controller signal receiving error | |
| 10 | – | – | |
| 11 | – | – | |
| 12 | Fb | Indoor unit control system error (memory error, etc.) | |
| – | E0, E3 | Remote controller transmission error | |
| – | E1, E2 | Remote controller control board error | |

[Output pattern B] Errors detected by unit other than indoor unit (outdoor unit, etc.)

| Wireless remote controller<br>Beeper sounds/OPERATION INDICATOR lamp blinks (Number of times) | Wired remote controller<br>① Check code | Symptom | Remark |
|---|---|---|---|
| 1 | E9 | Indoor/outdoor unit communication error (Transmitting error) (Outdoor unit) | For details, check the LED display of the outdoor controller board. As for outdoor unit, refer to outdoor unit's service manual. |
| 2 | UP | Compressor overcurrent interruption | |
| 3 | U3,U4 | Open/short of outdoor unit thermistors | |
| 4 | UF | Compressor overcurrent interruption (When compressor locked) | |
| 5 | U2 | Abnormal high discharging temperature/49C worked/ insufficient refrigerant | |
| 6 | U1,Ud | Abnormal high pressure (63H worked)/Overheating protection operation | |
| 7 | U5 | Abnormal temperature of heatsink | |
| 8 | U8 | Outdoor unit fan protection stop | |
| 9 | U6 | Compressor overcurrent interruption/Abnormal of power module | |
| 10 | U7 | Abnormality of superheat due to low discharge temperature | |
| 11 | U9,UH | Abnormality such as overvoltage or voltage shortage and abnormal synchronous signal to main circuit/Current sensor error | |
| 12 | – | – | |
| 13 | – | – | |
| 14 | Others | Other errors (Refer to the technical manual for the outdoor unit.) | |

*1 If the beeper does not sound again after the initial 2 beeps to confirm the self-check start signal was received and the OPERATION INDICATOR lamp does not come on, there are no error records.

*2 If the beeper sounds 3 times continuously "beep, beep, beep (0.4 + 0.4 + 0.4 sec.)" after the initial 2 beeps to confirm the self-check start signal was received, the specified refrigerant address is incorrect.

• On wireless remote controller
The continuous buzzer sounds from receiving section of indoor unit.
Blink of operation lamp
• On wired remote controller
① Check code displayed in the LCD. (Refer to the previous page, ① check code.)

• If the unit cannot be operated properly after the test run, refer to the following table to find out the cause.

| Symptom | | | Cause |
|---|---|---|---|
| Wired remote controller | | LED 1, 2 (PCB in outdoor unit) | |
| PLEASE WAIT | For about 2 minutes after power-on | After LED 1, 2 are lighted, LED 2 is turned off, then only LED 1 is lighted. (Correct operation) | •For about 2 minutes following power-on,operation of the remote controller is not possible due to system start-up. (Correct operation) |
| PLEASE WAIT → Error code | Subsequent to about 2 minutes after power-on | Only LED 1 is lighted. → LED 1, 2 blink. | •Connector for the outdoor unit's protection device is not connected.<br>•Reverse or open phase wiring for the outdoor unit's power terminal block (L1, L2, GR) |
| Display messages do not appear even when operation switch is turned ON (operation lamp does not light up). | | Only LED 1 is lighted. → LED 1 blinks twice, LED 2 blinks once. | •Incorrect wiring between indoor and outdoor units (incorrect polarity of S1, S2, S3)<br>•Remote controller wire short |

On the wireless remote controller with condition above, following phenomena take place.
• No signals from the remote controller can be received.
• OPE lamp is blinking.
• The buzzer makes a short ping sound.

**Note:**
**Operation is not possible for about 30 seconds after cancellation of function selection. (Correct operation)**

For description of each LED (LED1, 2, 3) provided on the indoor controller, refer to the following table.

| | |
|---|---|
| LED1 (power for microcomputer) | Indicates whether control power is supplied. Make sure that this LED is always lit. |
| LED2 (power for remote controller) | Indicates whether power is supplied to the remote controller.<br>This LED lights only in the case of the indoor unit which is connected to the outdoor unit refrigerant addresses "0". |
| LED3 (communication between indoor and outdoor units) | Indicates state of communication between the indoor and outdoor units.<br>Make sure that this LED is always blinking. |

## 10-3. SELF-DIAGNOSIS ACTION TABLE

Note: Refer to the manual of outdoor unit for the details of display such as F, U, and other E.

| Error Code | Abnormal point and detection method | Cause | Countermeasure |
|---|---|---|---|
| P1 | **Room temperature thermistor (TH1)**<br>① The unit is in 3-minute resume prevention mode if short/open of thermistor is detected. Abnormal if the unit does not reset normally after 3 minutes. (The unit returns to normal operation, if it has been reset normally.)<br>② Constantly detected during cooling, drying, and heating operation.<br>Short: 90℃[194˚F] or more<br>Open: -40℃[-40˚F] or less | ① Defective thermistor characteristics<br>② Contact failure of connector (CN20) on the indoor controller board (Insert failure)<br>③ Breaking of wire or contact failure of thermistor wiring<br>④ Defective indoor controller board | ①–③ Check resistance value of thermistor.<br>0℃ [32˚F] ·····15.0kΩ<br>10℃[50˚F] ·····9.6kΩ<br>20℃[68˚F] ·····6.3kΩ<br>30℃[86˚F] ·····4.3kΩ<br>40℃[104˚F] ·····3.0kΩ<br>If you put force on (draw or bend) the lead wire with measuring resistance value of thermistor, breaking of wire or contact failure can be detected.<br>② Check contact failure of connector (CN20) on the indoor controller board. Refer to 10-7. Turn the power on again and check restart after inserting connector again.<br>④ Check room temperature display on remote controller.<br>Replace indoor controller board if there is abnormal difference with actual room temperature.<br><br>Turn the power off, and on again to operate after check. |
| P2 | **Pipe temperature thermistor/Liquid (TH2)**<br>① The unit is in 3-minute resume prevention mode if short/open of thermistor is detected. Abnormal if the unit does not reset normally after 3 minutes. (The unit returns to normal operation, if it has been reset normally.)<br>② Constantly detected during cooling, drying, and heating (except defrosting) operation.<br>Short: 90℃[194˚F] or more<br>Open: -40℃[-40˚F] or less | ① Defective thermistor characteristics<br>② Contact failure of connector (CN44) on the indoor controller board (Insert failure)<br>③ Breaking of wire or contact failure of thermistor wiring<br>④ Defective refrigerant circuit is causing thermistor temperature of 90℃[194˚F] or more or -40℃[-40˚F] or less.<br>⑤ Defective indoor controller board | ①–③ Check resistance value of thermistor.<br>For characteristics, refer to (P1) above.<br>② Check contact failure of connector (CN44) on the indoor controller board. Refer to 10-7. Turn the power on and check restart after inserting connector again.<br>④ Check pipe <liquid> temperature with remote controller in test run mode. If pipe <liquid> temperature is extremely low (in cooling mode) or high (in heating mode), refrigerant circuit may have defect.<br>⑤ Check pipe <liquid> temperature with remote controller in test run mode. If there is extremely difference with actual pipe <liquid> temperature, replace indoor controller board.<br><br>Turn the power off, and on again to operate after check. |
| P4<br>(5701) | **Contact failure of drain float switch (CN4F)**<br>① Extract when the connector of drain float switch is disconnected.<br>(③ and ④ of connector CN4F is not short-circuited.)<br>② Constantly detected during operation. | ① Contact failure of connector (Insert failure)<br><br>② Defective indoor controller board | ① Check contact failure of float switch connector.<br>Turn the power on again and check after inserting connector again.<br>② Operate with connector (CN4F) short-circuited. Replace indoor controller board if abnormality reappears. |
| P5 | **Drain overflow protection operation**<br>① Suspensive abnormality, if drain float switch is detected to be underwater for 1 minute and 30 seconds continuously with drain pump on.<br>Turn off compressor and indoor fan.<br>② Drain pump is abnormal if the condition above is detected during suspensive abnormality.<br>③ Constantly detected during drain pump operation. | ① Malfunction of drain pump<br>② Defective drain<br>Clogged drain pump<br>Clogged drain pipe<br>③ Defective drain float switch<br>Catch of drain float switch or malfunction of moving parts cause drain float switch to be detected under water (Switch On)<br>④ Defective indoor-controller board | ① Check if drain-up machine works.<br>② Check drain function.<br><br>③ Remove drain float switch connector CN4F and check if it is short (Switch On) with the moving part of float switch UP, or OPEN with the moving part of float switch down. Replace float switch if it is short with the moving part of float switch down.<br>④ Replace indoor controller board if it is short-circuited between ③-④ of the drain float switch connector CN4F and abnormality reappears.<br><br>It is not abnormal if there is no problem about the above-mentioned ①~④<br>Turn the power off, and on again to operate after check. |

| Error Code | Abnormal point and detection method | Cause | Countermeasure |
|---|---|---|---|
| P6 | **Freezing/overheating protection is working**<br>① Freezing protection (Cooling mode)<br>The unit is in 6-minute resume prevention mode if pipe <liquid or condenser/evaporator> temperature stays under -15˚C[5˚F] for 3 minutes, 3 minutes after the compressor started. Abnormal if it stays under -15˚C[5˚F] for 3 minutes again within 16 minutes after 6-minute resume prevention mode. | (Cooling or drying mode)<br>① Clogged filter (reduced airflow)<br>② Short cycle of air path<br>③ Low load (low temperature) operation out of the tolerance range<br>④ Defective indoor fan motor<br>• Fan motor is defective.<br>• Indoor controller board is defective.<br>⑤ Defective outdoor fan control<br>⑥ Overcharge of refrigerant<br>⑦ Defective refrigerant circuit (clogs) | (Cooling or drying mode)<br>① Check clogs of the filter.<br>② Remove shields.<br>④ Refer to 10-6.<br>⑤ Check outdoor fan motor.<br>⑥⑦ Check operating condition of refrigerant circuit. |
| | ② Overheating protection (Heating mode)<br>The units is in 6-minute resume prevention mode if pipe <condenser / evaporator> temperature is detected as over 70˚C[158˚F] after the compressor started. Abnormal if the temperature of over 70˚C[158˚F] is detected again within 10 minutes after 6 minute resume prevention mode. | (Heating mode)<br>① Clogged filter (reduced airflow)<br>② Short cycle of air path<br>③ Overload (high temperature) operation out of the tolerance range<br>④ Defective indoor fan motor<br>• Fan motor is defective.<br>• Indoor controller board is defective.<br>⑤ Defective outdoor fan control<br>⑥ Overcharge of refrigerant<br>⑦ Defective refrigerant circuit (clogs)<br>⑧ Bypass circuit of outdoor unit is defective. | (Heating mode)<br>① Check clogs of the filter.<br>② Remove shields.<br>④ Refer to 10-6.<br>⑤ Check outdoor fan motor.<br>⑥~⑧Check operating condition of refrigerant circuit. |
| P8 | **Pipe temperature**<br><Cooling mode><br>Detected as abnormal when the pipe temperature is not in the cooling range 3 minutes after compressor start and 6 minutes after the liquid or condenser/evaporator pipe is out of cooling range.<br>Note 1) It takes at least 9 minutes to detect.<br>Note 2) Abnormality P8 is not detected in drying mode.<br>Cooling range : -3 deg C[-5.4deg F]≧(TH-TH1)<br>TH: Lower temperature between liquid pipe temperature (TH2) and condenser/ evaporator temperature (TH5)<br>TH1: Intake temperature<br><br><Heating mode><br>When 10 seconds have passed after the compressor starts operation and the hot adjustment mode has finished, the unit is detected as abnormal when condenser/ evaporator pipe temperature is not in heating range within 20 minutes.<br>Note 3) It takes at least 27 minutes to detect abnormality.<br>Note 4) It excludes the period of defrosting (Detection restarts when defrosting mode is over)<br>Heating range : 3 deg C[5.4deg F]≦(TH5-TH1) | ① Slight temperature difference between indoor room temperature and pipe <liquid or condenser / evaporator> temperature thermistor<br>• Shortage of refrigerant<br>• Disconnected holder of pipe <liquid or condenser / evaporator> thermistor<br>• Defective refrigerant circuit<br>② Converse connection of extension pipe (on plural units connection)<br>③ Converse wiring of indoor/ outdoor unit connecting wire (on plural units connection)<br>④ Defective detection of indoor room temperature and pipe <condenser / evaporator> temperature thermistor<br>⑤ Stop valve is not opened completely. | ①~④ Check pipe <liquid or condenser / evaporator> temperature with room temperature display on remote controller and outdoor controller circuit board.<br>Pipe <liquid or condenser / evaporator> temperature display is indicated by setting SW2 of outdoor controller circuit board as follows.<br>( Conduct temperature check with outdoor controller circuit board after connecting 'A-Control Service Tool(PAC-SK52ST)'. )<br>②③Check converse connection of extension pipe or converse wiring of indoor/outdoor unit connecting wire. |

| Error Code | Abnormal point and detection method | Cause | Countermeasure |
|---|---|---|---|
| P9 | **Pipe temperature thermistor / Condenser-Evaporator (TH5)**<br>① The unit is in 3-minute resume protection mode if short/open of thermistor is detected. Abnormal if the unit does not get back to normal within 3 minutes. (The unit returns to normal operation, if it has been reset normally.)<br>② Constantly detected during cooling, drying, and heating operation (except defrosting)<br>Short: 90˚C[194˚F] or more<br>Open: -40˚C[-40˚F] or less | ① Defective thermistor characteristics<br>② Contact failure of connector (CN44) on the indoor controller board (Insert failure)<br>③ Breaking of wire or contact failure of thermistor wiring<br>④ Temperature of thermistor is 90˚C[194˚F] or more or -40˚C[-40˚F] or less caused by defective refrigerant circuit.<br>⑤ Defective indoor controller board | ①–③ Check resistance value of thermistor. For characteristics, refer to (P1) above.<br>② Check contact failure of connector (CN44) on the indoor controller board. Refer to 10-7. Turn the power on and check restart after inserting connector again.<br>④ Operate in test run mode and check pipe <condenser / evaporator> temperature with outdoor controller circuit board. If pipe <condenser / evaporator> temperature is exclusively low (in cooling mode) or high (in heating mode), refrigerant circuit may have defect.<br>⑤ Operate in test run mode and check pipe <condenser / evaporator> temperature with outdoor control circuit board. If there is extreme difference with actual pipe <condenser / evaporator> temperature, replace indoor controller board.<br>There is no abnormality if none of above comes within the unit.<br>Turn the power off and on again to operate.<br>( In case of checking pipe temperature with outdoor controller circuit board, be sure to connect A-control service tool (PAC-SK52ST). ) |
| PA (2500) | **Forced compressor stop (due to water leakage abnormality)**<br>① The unit has a water leakage abnormality when the following conditions, a) and b), are satisfied while the above-mentioned detection is performed.<br>a) The intake temperature subtracted with liquid pipe temperature detects to be less than -10˚C[14˚F] for a total of 30 minutes. (When the drain sensor is detected to be NOT soaked in the water, the detection record of a) and b) will be cleared.)<br>b) Drain float switch detects to be in the water for more than 15 minutes.<br>*Once the water leakage abnormality is detected, abnormality state will not be released until the main power is reset. | ① Drain pump trouble<br>② Drain defective<br>· Drain pump clogging<br>· Drain pipe clogging<br>③ Open circuit of float switch<br>④ Contact failure of float switch connector<br>⑤ Dew condensation on float switch<br>·Drain water descends along lead wire.<br>·Drain water waving due to filter clogging.<br>⑥ Extension piping connection difference at twin, triple, quadruple system.<br>⑦ Miswiring of indoor/ outdoor connecting at twin, triple, quadruple system.<br>⑧ Room temperature thermistor / liquid pipe temperature thermistor detection is defective. | ①Check the drain pump.<br>②Check whether water can be drained.<br>③Check the resistance of the float switch.<br>④Check the connector contact failure.<br>⑤Check the float switch leadwire mounted.<br>Check the filter clogging.<br>⑥Check the piping connection.<br>⑦Check the indoor/ outdoor connecting wires.<br>⑧Check the room temperature display of remote controller.<br>Check the indoor liquid pipe temperature display of outdoor controller board. |
| E0 or E4 | **Remote controller transmission error(E0)/signal receiving error(E4)**<br>① Abnormal if main or sub remote controller cannot receive any transmission normally from indoor unit of refrigerant address “0” for 3 minutes. (Error code : E0)<br>② Abnormal if sub remote controller could not receive for any signal for 2 minutes. (Error code: E0)<br><br>① Abnormal if indoor controller board cannot receive any data normally from remote controller board or from other indoor controller board for 3 minutes. (Error code: E4)<br>② Indoor controller board cannot receive any signal from remote controller for 2 minutes. (Error code: E4) | ① Contact failure at transmission wire of remote controller<br>② All remote controllers are set as “sub” remote controller. In this case, E0 is displayed on remote controller, and E4 is displayed at LED (LED1, LED2) on the outdoor controller circuit board.<br>③ Miswiring of remote controller<br>④ Defective transmitting receiving circuit of remote controller<br>⑤ Defective transmitting receiving circuit of indoor controller board of refrigerant addresses “0”.<br>⑥ Noise has entered into the transmission wire of remote controller. | ① Check disconnection or looseness of indoor unit or transmission wire of remote controller.<br>② Set one of the remote controllers “main” if there is no problem with the action above.<br>③ Check wiring of remote controller.<br>• Total wiring length: max. 500m[1640ft] (Do not use cable × 3 or more.)<br>• The number of connecting indoor units: max. 16 units<br>• The number of connecting remote controller: max. 2 units<br><br>When the above-mentioned problem of ①~③ are not applied,<br>④ Diagnose remote controllers.<br>a) When “RC OK” is displayed, remote controllers have no problem. Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board.<br>b) When “RC NG” is displayed, replace remote controller.<br>c) When “RC E3” is displayed,<br>d) When “ERC 00-06” is displayed,<br>[ c),d)→Noise may be causing abnormality. ]<br>❇ If the unit is not normal after replacing indoor controller board in group control, indoor controller board of address “0” may be abnormal. |

| Error Code | Abnormal point and detection method | Cause | Countermeasure |
|---|---|---|---|
| E3<br>or<br>E5 | **Remote controller transmission error(E3)/signal receiving error(E5)**<br>① Abnormal if remote controller could not find blank of transmission path for 6 seconds and could not transmit. (Error code: E3)<br>② Remote controller receives transmitted data at the same time, compares the data, and when detecting it, judges different data to be abnormal 30 continuous times. (Error code: E3)<br><br>① Abnormal if indoor controller board could not find blank of transmission path. (Error code: E5)<br>② Indoor controller board receives transmitted data at the same time, compares the data,and when detecting it, judges different data to be abnormal 30 continuous times. (Error code: E5) | ① 2 remote controllers are set as "main." (In case of 2 remote controllers)<br>② Remote controller is connected with 2 indoor units or more.<br>③ Repetition of refrigerant address<br>④ Defective transmitting receiving circuit of remote controller<br>⑤ Defective transmitting receiving circuit of indoor controller board<br>⑥ Noise has entered into transmission wire of remote controller. | ① Set a remote controller to main, and the other to sub.<br><br>② Remote controller is connected with only one indoor unit.<br>③ The address changes to a separate setting.<br><br>④~⑥ Diagnose remote controller.<br>a) When "RC OK" is displayed, remote controllers have no problem. Turn the power off, and on again to check. When becoming abnormal again, replace indoor controller board.<br>b)When "RC NG" is displayed, replace remote controller.<br>c)When "RC E3" or "ERC 00-66" is displayed, noise may be causing abnormality. |
| E6 | **Indoor/outdoor unit communication error (Signal receiving error)**<br>① Abnormal if indoor controller board cannot receive any signal normally for 6 minutes after turning the power on.<br>② Abnormal if indoor controller board cannot receive any signal normally for 3 minutes.<br>③ Consider the unit as abnormal under the following condition: When 2 or more indoor units are connected to an outdoor unit, indoor controller board cannot receive a signal for 3 minutes from outdoor controller circuit board, a signal which allows outdoor controller circuit board to transmit signals. | ① Contact failure, short circuit or, miswiring (converse wiring) of indoor/outdoor unit connecting wire<br>② Defective transmitting receiving circuit of indoor controller board<br>③ Defective transmitting receiving circuit of indoor controller board<br>④ Noise has entered into indoor/outdoor unit connecting wire. | ❊ Check LED display on the outdoor control circuit board. (Connect A-control service tool, PAC-SK52ST.) Refer to EA-EC item if LED displays EA-EC.<br>① Check disconnection or looseness of indoor/outdoor unit connecting wire of indoor unit or outdoor unit. Check all the units in case of twin indoor unit system.<br>②-④ Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board or outdoor controller circuit board.<br>❊ Other indoor controller board may have defect in case of twin indoor unit system. |
| E7 | **Indoor/outdoor unit communication error (Transmitting error)**<br>Abnormal if indoor controller board receives "1" 30 times continuously when indoor controller board transmits "0" signal. | ① Defective transmitting receiving circuit of indoor controller board<br>② Noise has entered into power supply.<br>③ Noise has entered into outdoor control wire. | ①-③ Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board. |
| Fb | **Indoor controller board**<br>Abnormal if data cannot be read normally from the nonvolatile memory of the indoor controller board. | ① Defective indoor controller board | ① Replace indoor controller board. |
| E1<br>or<br>E2 | **Remote controller control board**<br>① Abnormal if data cannot be read normally from the nonvolatile memory of the remote controller control board. (Error code: E1)<br><br>② Abnormal if the clock function of remote controller cannot be operated normally. (Error code: E2) | ① Defective remote controller | ① Replace remote controller. |

## 10-4. TROUBLESHOOTING BY INFERIOR PHENOMENA

Note: Refer to the manual of outdoor unit for the detail of remote controller.

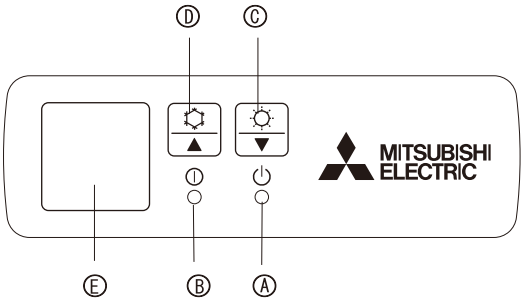
| Phenomena | Cause | Countermeasure |
|---|---|---|
| **(1)LED2 on indoor controller board is off.** | • When LED1 on indoor controller board is also off. | |
| | ① Power supply of rated voltage is not supplied to outdoor unit. | ① Check the voltage of outdoor power supply terminal block (L1, L2).<br>• When AC 208/230V is not detected, check the power wiring to outdoor unit and the breaker.<br>• When AC 208/230V is detected, check ② (below). |
| | ② Defective outdoor controller circuit board | ② Check the voltage between outdoor terminal block S1 and S2.<br>• When AC 208/230V is not detected,<br>—check the fuse on outdoor controller circuit board.<br>—check the wiring connection.<br>• When AC 208/230V is detected, check ③ (below). |
| | ③ Power supply of 208/230V is not supplied to indoor unit. | ③ Check the voltage between indoor terminal block S1 and S2.<br>• When AC 208/230V is not detected, check indoor/outdoor unit connecting wire for miswiring.<br>• When AC 208/230V is detected, check ④ (below). |
| | ④ Defective indoor controller board | ④ Check the fuse on indoor controller board. Check the wiring connection. If no problem are found, indoor controller board is defective. |
| | **(For the separate indoor/outdoor unit power supply system)** | |
| | ① Power supply of 208/230V AC is not supplied to indoor unit. | ① Check the voltage of indoor power supply terminal block (L1,L2).<br>• When AC208/230V is not detected, check the power supply wiring.<br>• When AC208/230V is detected, check ② (below). |
| | ② The connectors of the optional replacement kit are not used. | ② Check that there is no problem in the method of connecting the connectors.<br>• When there are problems in the method of connecting the connectors, connect the connector correctly referring to installation manual of an optional kit.<br>• When there is no problem in the method of connecting the connectors, check ③ (below). |
| | ③ Defective indoor controller board | ③ Check the fuse on indoor controller board. Check the wiring connection. If no problem are found, indoor controller board is defective. |
| | • When LED1 on indoor controller board is lit. | |
| | ① Mis-setting of refrigerant address for outdoor unit (There is no unit corresponding to refrigerant address “0”.) | ① Check again the setting of refrigerant address for outdoor unit. Set the refrigerant address to “0”. (For grouping control system under which 2 or more outdoor units are connected, set one of the units to “0”.) Set refrigerant address using SW1 (3-6) on outdoor controller circuit board. |

Note: Refer to the manual of outdoor unit for the detail of remote controller.

| Phenomena | Cause | Countermeasure |
|---|---|---|
| **(2)LED2 on indoor controller board is blinking.** | • When LED1 on indoor controller board is also blinking.<br>Connection failure of indoor/outdoor unit connecting wire | Check indoor/outdoor unit connecting wire for connection failure. |
| | • When LED1 is lit.<br>① Miswiring of remote controller wires<br>Under twin indoor unit system, 2 indoor units are wired together. | ① Check the connection of remote controller wires in case of twin indoor unit system. When 2 indoor units are wired in one refrigerant system, connect remote controller wires to one of those units. |
| | ② Refrigerant address for outdoor unit is wrong or not set.<br>Under grouping control system, there are some units whose refrigerant address is 0. | ② Check the setting of refrigerant address in case of grouping control system.<br>If there are some units whose refrigerant addresses are 0 in one group, set one of the units to 0 using SW1 (3-6) on outdoor controller circuit board. |
| | ③ Short-cut of remote controller wires<br>④ Defective remote controller | ③④ Remove remote controller wires and check LED2 on indoor controller board.<br>• When LED2 is blinking, check the short-cut of remote controller wires.<br>• When LED2 is lit, connect remote controller wires again and:<br>if LED2 is blinking, remote controller is defective; if LED2 is lit, connection failure of remote controller terminal block etc. has returned to normal. |
| **(3)Upward/downward vane performance failure** | ① The vane is not downward during defrosting and heat preparation and when the thermostat is OFF in HEAT mode. (Working of COOL protection function) | ① Normal operation (The vane is set to horizontal regardless of remote control.) |
| | ② Vane motor does not rotate.<br>• Defective vane motor<br>• Breaking of wire or connection failure of connector | ② Check ② (left).<br>• Check the vane motor. (Refer to “How to check the parts”.)<br>• Check for breaking of wire or connection failure of connector. |
| | ③ Upward/downward vane does not work.<br>• The vane is set to fixed position. | ③ Normal operation (Each connector on vane motor side is disconnected or setting the fixed vanes by wired remote controller.) |
| **(4)Receiver for wireless remote controller** | ① Weak batteries of wireless remote controller | ① Replace batteries of wireless remote controller. |
| | ② Contact failure of connector (CNB) on wireless remote controller board (Insert failure)<br>③ Contact failure of connector (CN90) on indoor controller board (Insert failure)<br>④ Contact failure of connector between wireless remote controller board and indoor controller board | ②~④<br>Check contact failure of each connector. If no problems are found of connector, replace indoor controller board. When the same trouble occurs even if indoor controller board is replaced, replace wireless remote controller board. |

## 10-5. EMERGENCY OPERATION

### 10-5-1. When wireless remote controller troubles or its battery is exhausted




**When the remote controller cannot be used**

When the batteries of the remote controller run out or the remote controller malfunctions, the emergency operation can be done using the emergency buttons on the grille.

Ⓐ DEFROST/STAND BY lamp
Ⓑ Operation lamp
Ⓒ Emergency operation switch (heating)
Ⓓ Emergency operation switch (cooling)
Ⓔ Receiver

Starting operation

- To operate the cooling mode, press the ☼ button Ⓓ for more than 2 seconds.
- To operate the heating mode, press the ☼ button Ⓒ for more than 2 seconds.

* Lighting of the Operation lamp Ⓑ means the start of operation.

**Note:**

- **Details of emergency mode are as shown below.**

| Operation mode | COOL | HEAT |
|---|---|---|
| Set temperature | 24℃,75˚F | 24℃,75˚F |
| Fan speed | High | High |
| Airflow direction | Horizontal | Downward 5 |

Stopping operation

• To stop operation, press the ☼ button Ⓓ or the ☼ button Ⓒ.

### 10-5-2. When wired remote controller or indoor unit microcomputer troubles

1.When the wired remote control or the indoor unit microcomputer has failed, but all other components work properly, if you set the switch (SWE) on the indoor controller board ON, the indoor unit will begin emergency operation. When emergency operation is activated, the indoor unit operates as follows:
(1)Indoor fan is running at high speed. (2)Drain-up machine is working.

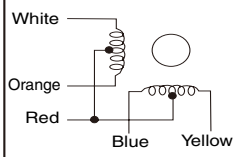
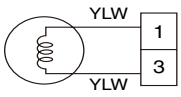
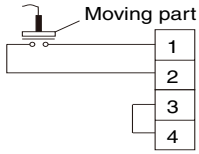
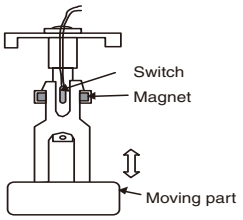
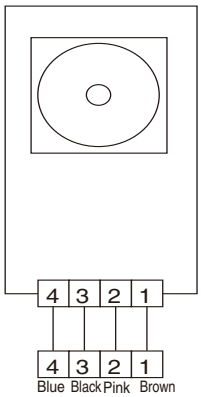
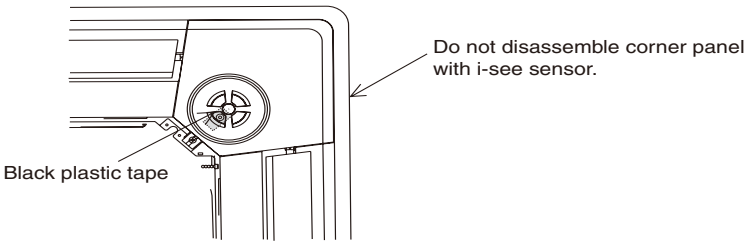
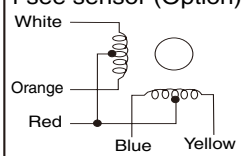
※ Note on the wireless remote control: when the remote control does not function, it is possible to activate emergency operation by using the indoor unit emergency operation switch (SW1, SW2 of the wireless signal receiver board).
However, if the indoor unit microcomputer has failed, it is necessary to proceed with points 2 and 3 below as in the case of the wired remote control.

2.When you activate emergency operation of the cooling or heating, you have to set the switch (SWE) on the indoor controller board and activate emergency operation of the outdoor unit.
For details on how to activate emergency operation of the outdoor unit, refer to the outdoor unit wiring diagram.

3.Before you activate emergency operation, check the following points:
(1)Emergency operation cannot be activated when:
•the outdoor unit malfunctions. •the indoor fan malfunctions.
•when it has detected the malfunction of drain-up machine during self-diagnosing.
(2)Emergency operation becomes continuous only by switching the power source on/off.
ON/OFF on the remote control or temperature control etc. does not function.
(3)Avoid operating for a long time when the outdoor unit begins defrosting while emergency operation of the heating is activated because it will start to blow cold air.
(4)Emergency cooling should be limited to 10 hours maximum (The indoor unit heat exchanger may freeze).
(5)After emergency operation has been deactivated set the switches etc. to their original positions.
(6)Movement of the vanes does not work in emergency operation, therefore you have to slowly set them manually to the appropriate position.

## 10-6. HOW TO CHECK THE PARTS

**PLA-A12BA PLA-A18BA PLA-A24BA PLA-A30BA PLA-A36BA PLA-A42BA**
**PLA-A12BA$_1$ PLA-A18BA$_1$ PLA-A24BA$_1$ PLA-A30BA$_1$ PLA-A36BA$_1$ PLA-A42BA$_1$**

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Room temperature thermistor (TH1)<br>Pipe temperature thermistor/liquid(TH2)<br>Condenser/Evaporator temperature thermistor (TH5)</td><td>Disconnect the connector then measure the resistance with a tester.<br>(At the ambient temperature of 10˚C[50˚F]~30˚C[86˚F])<br><table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>4.3kΩ~9.6kΩ</td><td>Open or short</td></tr></table>(Refer to the Thermistor Characteristic graph.)</td></tr>
<tr><td>Vane motor (MV)<br> 
</td><td>Measure the resistance between the terminals with a tester.<br>(At the ambient temperature of 20˚C[68˚F]~30˚C[86˚F])<br><table><tr><th>Connector</th><th>Normal</th><th>Abnormal</th></tr><tr><td>Red - Yellow (⑤-③, ⑩-⑧, ⑮-⑬, ⑳-⑱)</td><td rowspan="4">300Ω</td><td rowspan="4">Open or short</td></tr><tr><td>Red - Blue (⑤-①, ⑩-⑥, ⑮-⑪, ⑳-⑯)</td></tr><tr><td>Red - Orange (⑤-④, ⑩-⑨, ⑮-⑭, ⑳-⑲)</td></tr><tr><td>Red - White (⑤-②, ⑩-⑦, ⑮-⑫, ⑳-⑰)</td></tr></table></td></tr>
<tr><td>Drain pump (DP)<br> 
</td><td>Measure the resistance between the terminals with a tester.<br>(Winding temperature 20˚C[68˚F])<br><table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>290Ω</td><td>Open or short</td></tr></table></td></tr>
<tr><td>Drain float switch (FS)<br> 
</td><td>Measure the resistance between the terminals with a tester.<br><table><tr><th>State of moving part</th><th>Normal</th><th>Abnormal</th></tr><tr><td>UP</td><td>Short</td><td>Other than short</td></tr><tr><td>DOWN</td><td>Open</td><td>Other than open</td></tr></table> 
</td></tr>
<tr><td>i-see sensor (Option)<br> 
</td><td>Turn on the indoor unit with the black plastic tape on the outside of i-see sensor controller board.<br>With electricity being turned on, measure the power voltage between connectors with tester.<br>i-see sensor rotates and pull out the connector of motor for i-see sensor.<br> 
<br>i-see sensor (At the ambient temperature of 10˚C[50˚F]~40˚C[104˚F])<br><table><tr><th>i-see sensor connector</th><th>Normal</th><th>Abnormal</th></tr><tr><td>②(–)—④(+)</td><td>DC 1.857V~ 3.132V</td><td>Other than the normal</td></tr><tr><td>①(+)—②(–)</td><td>DC 0.939V~ 1.506V</td><td>Other than the normal</td></tr></table>**NOTE** : Be careful of handing such a static electricity.</td></tr>
<tr><td>Vane motor for i-see sensor (Option)<br> 
</td><td>Measure the resistance between the terminals with a tester.<br>(At the ambient temperature of 20˚C[68˚F]~30˚C[86˚F])<br><table><tr><th>Connector</th><th>Normal</th><th>Abnormal</th></tr><tr><td>Red - Yellow</td><td rowspan="4">250Ω</td><td rowspan="4">Open or short</td></tr><tr><td>Red - Blue</td></tr><tr><td>Red - Orange</td></tr><tr><td>Red - White</td></tr></table></td></tr>
</table>

### 10-6-1. Thermistor

<Thermistor Characteristic graph>

| | |
|---|---|
| Thermistor for lower temperature | Room temperature thermistor(TH1)<br>Pipe temperature thermistor/liquid(TH2)<br>Condenser/evaporator temperature thermistor(TH5) |

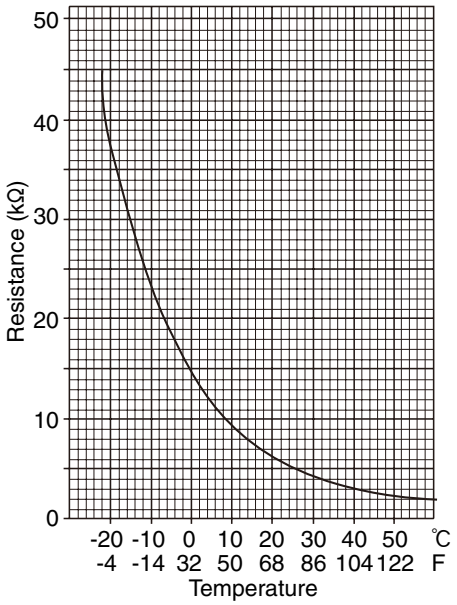
Thermistor $R_0$=15kΩ ± 3%
Fixed number of B=3480 ± 2%

$$t(℃)Rt=15\exp\{3480(\frac{1}{273+t}-\frac{1}{273})\}$$

$$T(^\circ F)Rt=15\exp\{3480(\frac{1}{273+\frac{T-32}{1.8}}-\frac{1}{273})\}$$

| | |
|---|---|
| 0℃ (32˚F) | 15kΩ |
| 10℃ (50˚F) | 9.6kΩ |
| 20℃ (68˚F) | 6.3kΩ |
| 25℃ (77˚F) | 5.4kΩ |
| 30℃ (86˚F) | 4.3kΩ |
| 40℃ (104˚F) | 3.0kΩ |

<Thermistor for lower temperature>

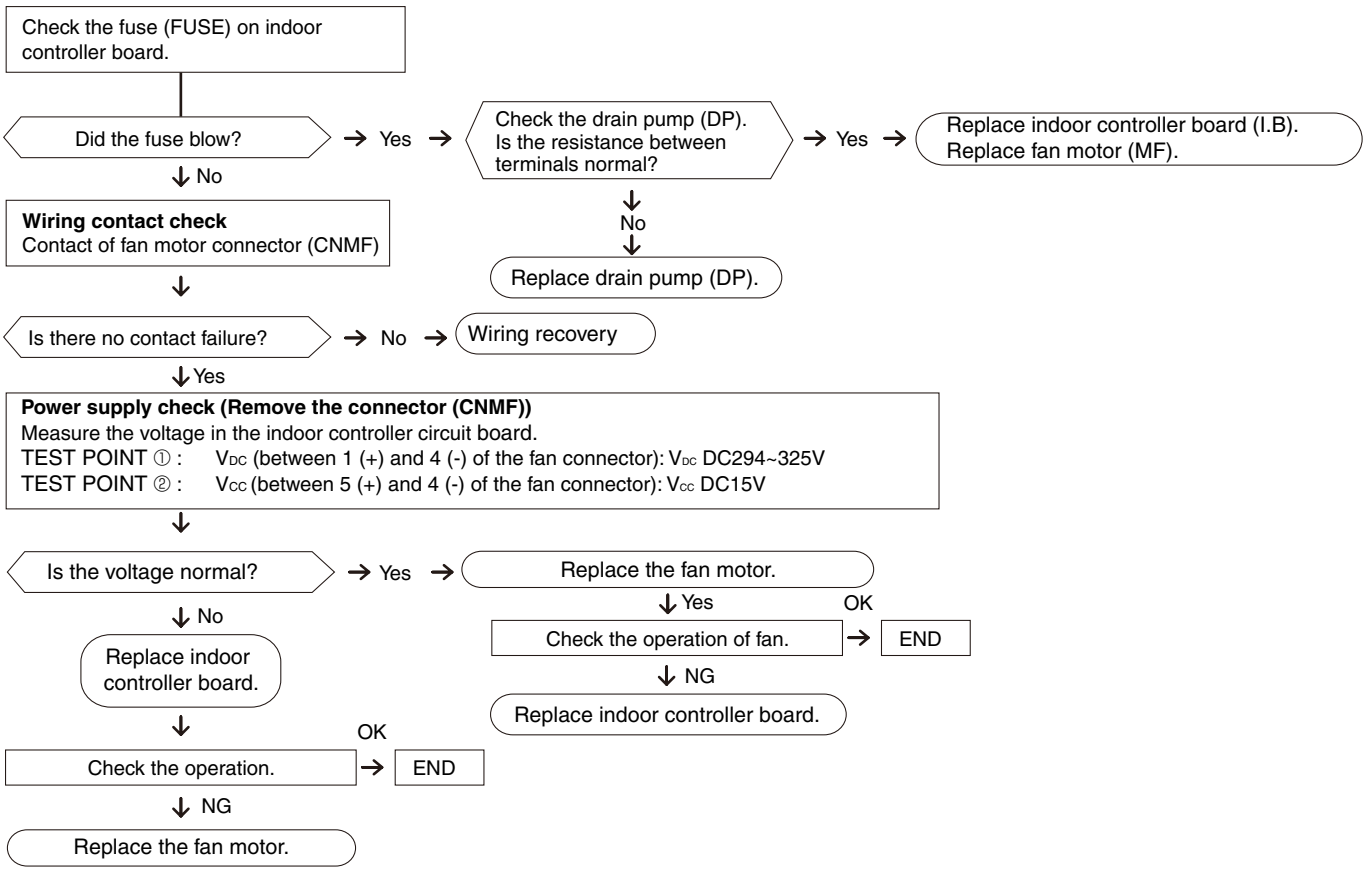



### 10-6-2. DC Fan motor (FAN MOTOR/ INDOOR CONTROLLER BOARD)

**Check method of DC fan motor (fan motor / indoor controller circuit board)**

① Notes
- · High voltage is applied to the connecter (CNMF) for the fan motor. Give attention to the service.
- · Do not pull out the connector (CNMF) for the motor with the power supply on.
  (It causes trouble of the indoor controller circuit board and fan motor.)

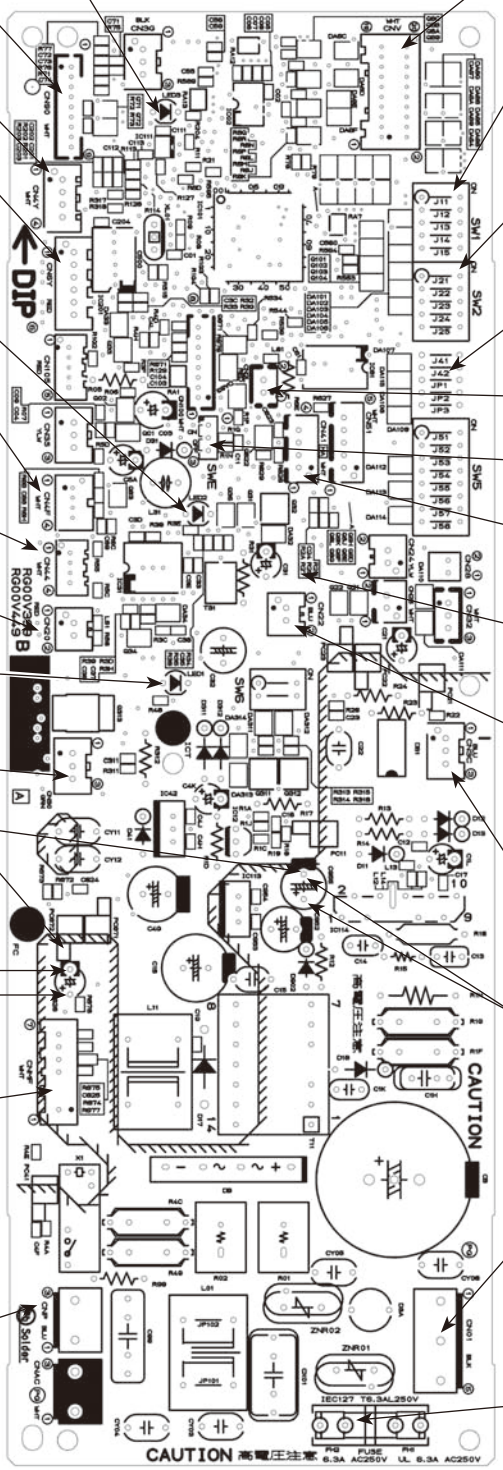
② Self check
Symptom : The indoor fan cannot turn around.


Check the fuse (FUSE) on indoor controller board.
Did the fuse blow?
Yes
Check the drain pump (DP). Is the resistance between terminals normal?
Yes
Replace indoor controller board (I.B). Replace fan motor (MF).
No
Wiring contact check
Contact of fan motor connector (CNMF)
No
Replace drain pump (DP).
Is there no contact failure?
No
Wiring recovery
Yes
Power supply check (Remove the connector (CNMF))
Measure the voltage in the indoor controller circuit board.
TEST POINT ① : VDC (between 1 (+) and 4 (-) of the fan connector): VDC DC294~325V
TEST POINT ② : VCC (between 5 (+) and 4 (-) of the fan connector): VCC DC15V
Is the voltage normal?
Yes
Replace the fan motor.
Yes
OK
Check the operation of fan.
END
No
Replace indoor controller board.
NG
Replace indoor controller board.
OK
Check the operation.
END
NG
Replace the fan motor.

## 10-7.TEST POINT DIAGRAM

**Indoor controller board**

**PLA-A12BA PLA-A18BA PLA-A24BA PLA-A30BA PLA-A36BA PLA-A42BA**
**PLA-A12BA$_1$ PLA-A18BA$_1$ PLA-A24BA$_1$ PLA-A30BA$_1$ PLA-A36BA$_1$ PLA-A42BA$_1$**




CN90
Connect to the wireless remote controller board (CNB)

CN4Y
i-see sensor

CN6Y
i-see sensor motor output
12V DC pulse output

LED2
Power supply (R.B)

CN4F
Drain float switch (FS)

CN44
Pipe temperature thermistor
①-② : Liquid (TH2)
③-④ : Condenser/Evaporator(TH5)

CN20
Room temperature thermistor (TH1)

LED1
Power supply (I.B)

CN30(Only PLA-A·BA$_1$)
Connector (LLC)

$V_{FG}$ : Voltage between PC6722 and C955(-)
(Same as ⑦(+)–④(-) of CNMF)

$V_{SP}$ : Voltage between pins of C626
DC0V (FAN stop)
DC1~6.5V (FAN operation)
(Same as ⑥(+)–④(-) of CNMF)

CNMF
Fan motor
①-④: DC 294~325V
⑤-④: DC15V
⑥-④: DC0~6.5V
⑦-④: Stop DC0 or 15V
Operation DC7.5V
(0~15V pulse)

CNP
Drain-pump output (DP)
(208/230V AC)

LED3
Transmission
(Indoor/outdoor)

CNV
Vane motor output (MV)
12V pulse output

SW1
Model selection

SW2
Capacity setting

Jumper wire J41,J42
Pair No. setting for wireless remote controller

CN2L
Connector (LOSSNAY)

SWE
Emergency operation

CN41
Connector
(HA terminal-A)

CN24
(Only PLA-A·BA$_1$)
Connector (Back-up heating)

CN22
Connect to the terminal block (TB5)
(Remote controller connecting wire)
(10.4~14.6V DC)

CN3C
Transmission
(Indoor/outdoor)
(0~24V DC)

$V_{CC}$ : Voltage between pins of C955
15VDC
(Same as ⑤(+)–④(-) of CNMF)

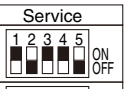
CN01
Connect to the Terminal Block (TB4)
(Indoor/outdoor connecting line)
Between ③ and ⑤
208/230V AC

FUSE
6.3A /250V

## 10-8. FUNCTIONS OF DIP SWITCH AND JUMPER WIRE

**Each function is controlled by the dip switch and the jumper wire on control P.C. board.**
**SW1 and SW2 are equipped only for service parts.**
**Model setting and capacity setting are memorised in the nonvolatile memory of the indoor controller board.**

(Marks in the table below) Jumper wire (○ : Short × : Open)

<table>
<tr><th>Jumper wire</th><th>Functions</th><th>Setting by the dip switch and jumper wire</th><th>Remarks</th></tr>
<tr><td>SW1</td><td>Model settings</td><td>
<table>
<tr><th>MODELS</th><th>Service</th></tr>
<tr><td>PLA-A·BA</td><td>
</td></tr>
</table>
</td><td>————</td></tr>
<tr><td>SW2</td><td>Capacity settings</td><td>
<table>
<tr><th>MODELS</th><th>Service</th><th>MODELS</th><th>Service</th></tr>
<tr><td>PLA-A12BA</td><td>
</td><td>PLA-A30BA</td><td> 
</td></tr>
<tr><td>PLA-A18BA</td><td>
</td><td>PLA-A36BA</td><td>
</td></tr>
<tr><td>PLA-A24BA</td><td>
</td><td>PLA-A42BA</td><td>
</td></tr>
</table>
</td><td>————</td></tr>
<tr><td>J41<br>J42</td><td>Pair number setting with wireless remote controller</td><td>
<table>
<tr><th rowspan="2">Wireless remote controller setting</th><th colspan="2">Control PCB setting</th></tr>
<tr><th>J41</th><th>J42</th></tr>
<tr><td>0</td><td>○</td><td>○</td></tr>
<tr><td>1</td><td>×</td><td>○</td></tr>
<tr><td>2</td><td>○</td><td>×</td></tr>
<tr><td>3 ~ 9</td><td>×</td><td>×</td></tr>
</table>
</td><td><Initial setting><br>Wireless remote controller: 0<br>Control PCB: ○ (for both J41 and J42)<br>Four pair number settings are supported.<br>The pair number settings of the wireless remote controller and indoor control PCB (J41/J42) are given in the table on the left.<br>('×' in the table indicates the jumper wire is disconnected.)</td></tr>
<tr><td>JP1</td><td>Unit type setting</td><td>
<table>
<tr><th>Model</th><th>JP1</th></tr>
<tr><td>Without TH5</td><td>○</td></tr>
<tr><td>With TH5</td><td>×</td></tr>
</table>
</td><td>There is no jumper (JP1) because these models have the cond./eva. temperature thermistor (TH5).</td></tr>
<tr><td>JP3</td><td>Indoor controller board type setting</td><td>
<table>
<tr><th>Indoor controller board type</th><th>JP3</th></tr>
<tr><td>Product</td><td>×</td></tr>
<tr><td>Service parts</td><td>○</td></tr>
</table>
</td><td>————</td></tr>
</table>

# 11 SPECIAL FUNCTION

## 11-1. ROTATION FUNCTION(AND BACK-UP FUNCTION, 2ND STAGE CUT-IN FUNCTION)

### 11-1-1. Operation

**(1) Rotation function(and Back-up function)**

**Outline of functions**

· Operating the unit of main and sub alternately according to the interval setting. (Rotation function)

※The setting of main/sub unit depends on the refrigerant address.(The setting of dip switch on the outdoor unit)

Refrigerant address"00" ⟶ Main unit

Refrigerant address"01" ⟶ Sub unit

· If an error occurrs to one unit, the other unit starts.(Back-up function)

**System constraint**

· This function is available only by the grouping control system(INDOOR UNIT : OUTDOOR UNIT=1:1) of 2 refrigerant group.(Refer to Fig 1)

· It is necessary to connect remote controller crossover wiring to between units(Wireless remote controller is unusable) and to assign refrigerant address to each unit.(Dip switch on the outdoor unit…Refrigerant address 00/01)

Operation pattern

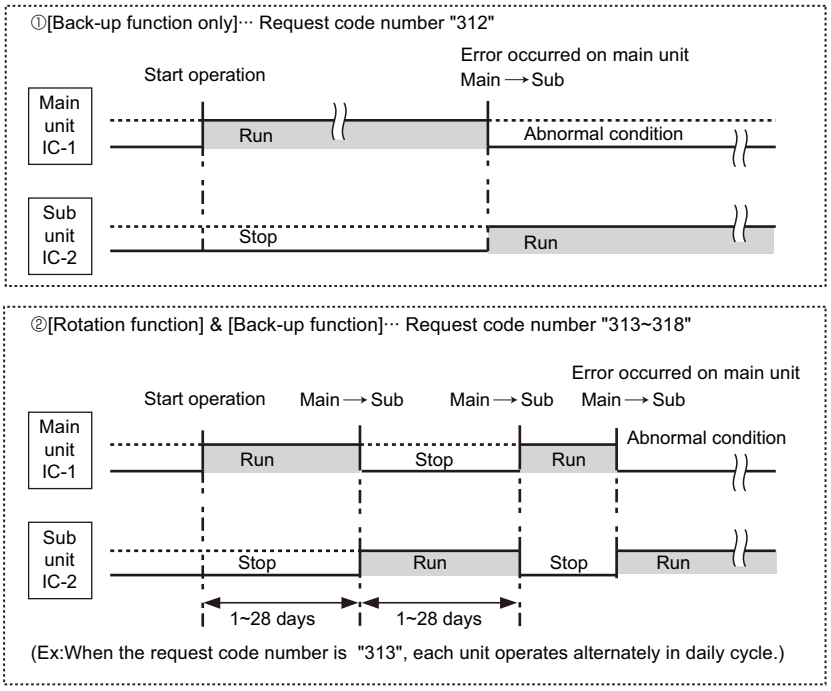
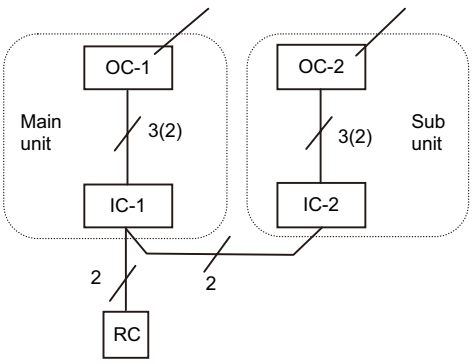



Fig 1




OC: Outdoor unit
IC: Indoor unit
RC: Wired remote controller

**(2) 2nd stage cut-in function**

**Outline of functions**

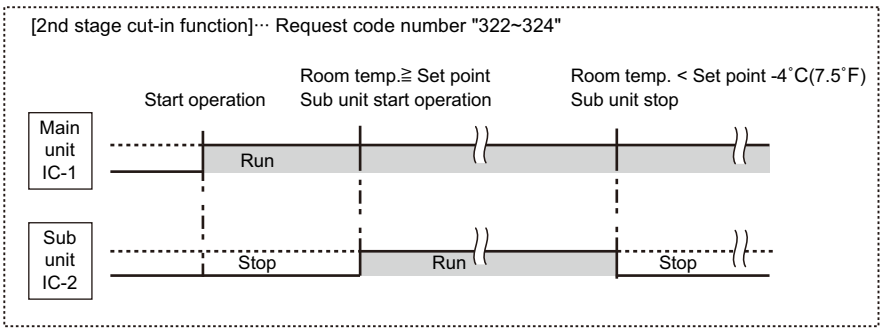
· Quantity of operating units is controlled according to the room temperature and set point.

· When room temperature becomes more than set point, standby unit starts.(2 units running )

· When room temperature falls below set point -4℃(7.5°F), standby unit stops.(1 unit running)

**System constraint**

· This function is available only in rotation operation(or back-up) and cooling mode.



**11-1-2.How to perform the operation of rotation function(Back-up function, 2nd stage cut-in function)**
Set by wired remote controller.(Maintenance monitor)

NOTICE

It is necessary to set the same content to both main unit and sub unit.
Every time indoor controller board is replaced for servicing, it is necessary to set each function.

**(1) Request Code List**

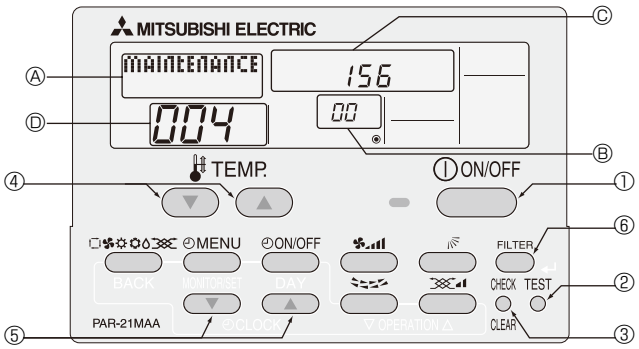
Rotation setting

| Setting No. (Request code) | Setting contents | Initial setting |
|---|---|---|
| No.1 (310) | Monitoring the request code of current setting. | |
| No.2 (311) | Rotation and Back-up OFF (Normal group control operation) | ◎ |
| No.3 (312) | Back-up function only | |
| No.4 (313) | Rotation ON (Alternating interval = 1day) and back-up function | |
| No.5 (314) | Rotation ON (Alternating interval = 3days) and back-up function | |
| No.6 (315) | Rotation ON (Alternating interval = 5days) and back-up function | |
| No.7 (316) | Rotation ON (Alternating interval = 7days) and back-up function | |
| No.8 (317) | Rotation ON (Alternating interval = 14days) and back-up function | |
| No.9 (318) | Rotation ON (Alternating interval = 28days) and back-up function | |

2nd stage cut-in setting

| Setting No. (Request code) | Setting contents | Initial setting |
|---|---|---|
| No.1 (320) | Monitoring the request code of current setting. | |
| No.2 (321) | Cut-in function OFF | ◎ |
| No.3 (322) | Cut-in function ON (Set point = Set temp. +4˚C(7.2˚F)) | |
| No.4 (323) | Cut-in function ON (Set point = Set temp. +6˚C(10.8˚F)) | |
| No.5 (324) | Cut-in function ON (Set point = Set temp. +8˚C(14.4˚F)) | |

**(2) Setting method of each function by wired remote controller**




B: Refrigerant address
C: Data display area
D: Request code display area

1. Stop running the air-conditioner(①).

2. Press the TEST button (②) for 3 seconds so that [Maintenance mode] appears on the screen (at Ⓐ ).
   ⟶After a while, [00] appears in the refrigerant address number display area.(at Ⓑ )

3. Press the CHECK button (③) for 3 seconds to switch to [Maintenance monitor].
   Note) It is not possible to switch to [Maintenance monitor] during data request in maintenance mode (i.e., while"----" is blinking) since no buttons are operative.

   [----] appears on the screen (at Ⓓ) when [Maintenance monitor] is activated.
   (The display (at Ⓓ) now allows you to set a request code No.)

4. Press the [TEMP ( ▽ and △ )] buttons (④) to select the desired refrigerant address.
   [ScreenⒷ] 00 ⟷ 01 ⟷ ····· ⟷ 15

5. Press the [CLOCK ( ▽ and △ )] buttons (⑤) to set the desired request code No.("311~318", "321~324", "331~335")
6. Press the FILTER button (⑥) to perform function setting.
   ⟶If the above operations are set correctly, request code number will appear in data display area.(at Ⓒ)
   [Example) When the request code number is "311", [311] appears on the screen.(at Ⓒ)]

[Refererence]
You can check the request code number of current setting by setting the request code number ("310", "320" or "330") and press the FILTER button.(⑥)
[Example) When the current setting is "Setting No.2(Request code 311)", [311] appears on the screen.(at Ⓒ)]

7. To return to normal mode, press the ON/OFF button (①).

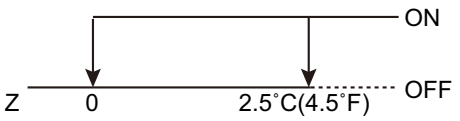
## 11-2. BACK-UP HEATING FUNCTION(CN24)

### 11-2-1. Operation

**Outline of functions**

The back-up heater signal is sent out according to the temperature difference between indoor room temperature and set temperature. This function is available only in heating operation.

| | Temperature difference (Z=Set temp. - Room temp.) | Back-up heater signal output |
|---|---|---|
| 1 | Z ≦ 0˚C(˚F) | OFF |
| 2 | 0 < Z < 2.5˚C(4.5˚F) | Keeping condition |
| 3 | 2.5˚C(4.5˚F) ≦ Z | ON |



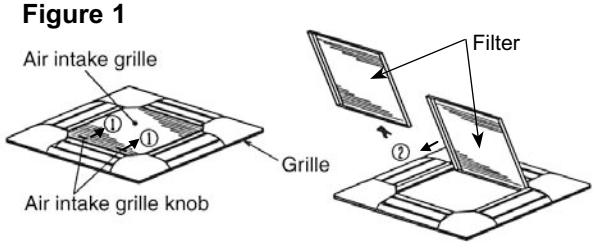
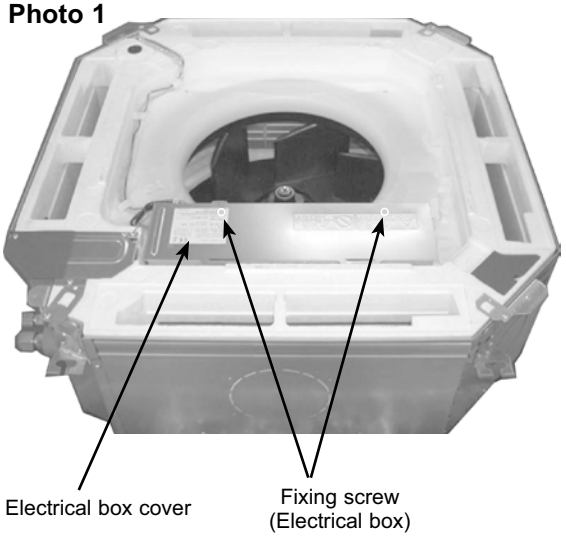
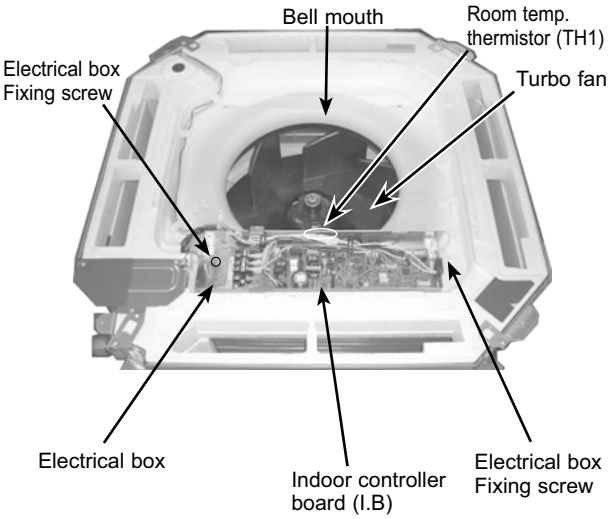

### 11-2-2. How to connect

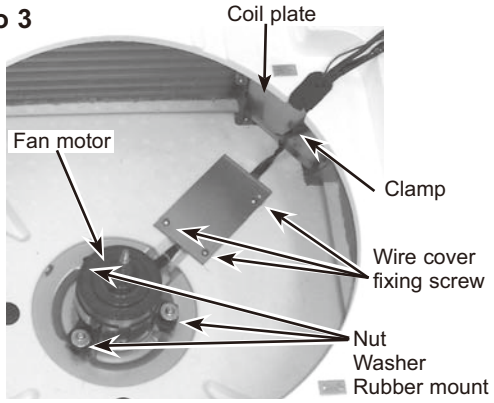
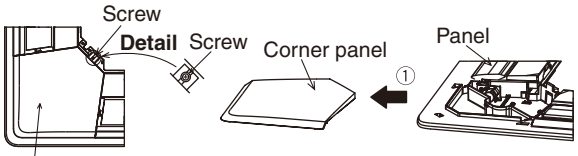
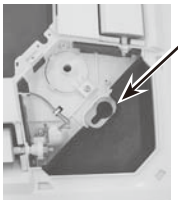
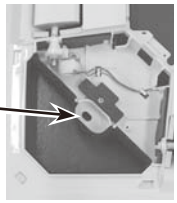
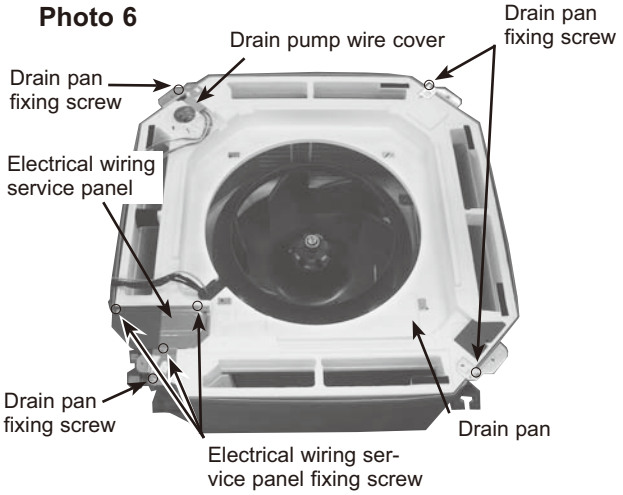
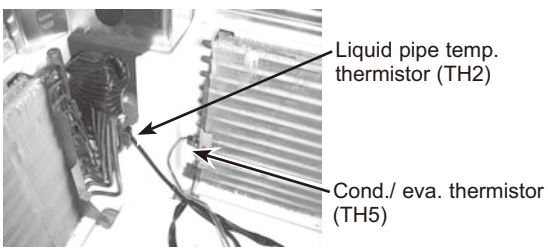
When connecting to the connector CN24 of the indoor unit, use PAC-SE56RA-E(optional parts).

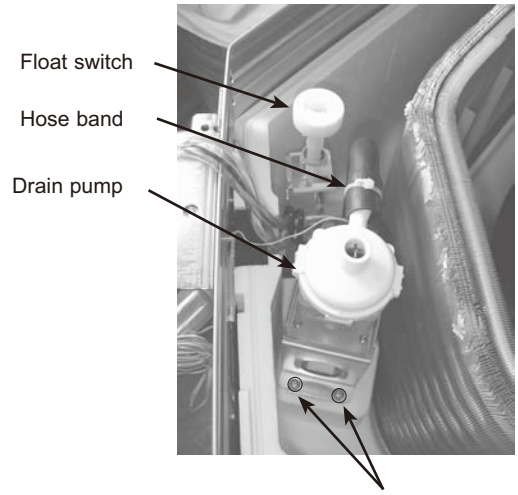
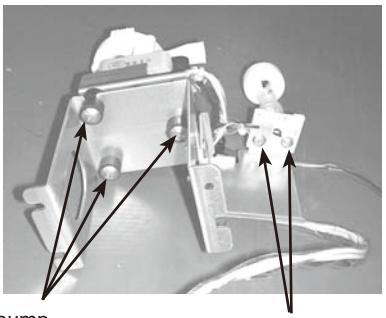
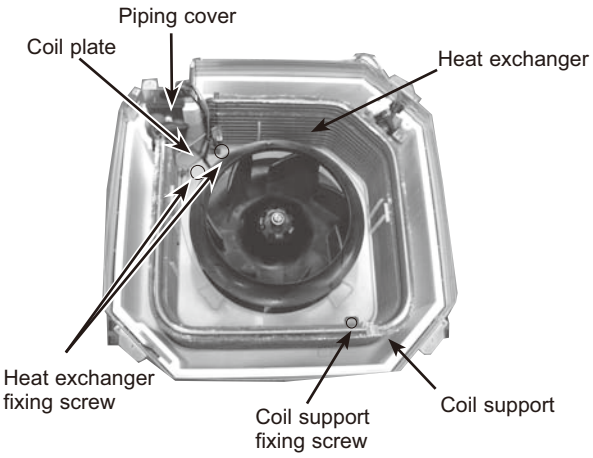
# 11 DISASSEMBLY PROCEDURE

**PLA-A12BA PLA-A18BA PLA-A24BA PLA-A30BA PLA-A36BA PLA-A42BA**
**PLA-A12BA$_1$ PLA-A18BA$_1$ PLA-A24BA$_1$ PLA-A30BA$_1$ PLA-A36BA$_1$ PLA-A42BA$_1$**

Be careful on removing heavy parts.

| OPERATING PROCEDURE | PHOTOS & ILLUSTRATIONS |
|---|---|
| **1. Removing the air intake grille**<br>(1) Slide the knob of air intake grille toward the arrow ① to open the air intake grille.<br>(2) Remove drop prevention hook from the panel.<br>(3) Slide the shaft in the hinge to the direction of the arrow ② and remove the air intake grille. | **Figure 1**<br>  <br> |
| **2. Removing the room temperature thermistor (TH1)**<br>(1) Remove the air intake grille and the filter. (See Figure 1)<br>(2) Remove the 2 screws from the electrical box.<br>(3) Disconnect the connector CN20 (Red) from the indoor controller board.<br>(4) Remove the room temperature thermistor and holder. | **Photo 1**<br>  <br> |
| **3. Removing the indoor controller board (I.B)**<br>(1) Remove the air intake grille and the filter. (See Figure 1)<br>(2) Remove the 2 screws from the electrical box cover.<br>(3) Disconnect the connectors :<br>CNMF (White/ 7P) for fan motor<br>CN44 (White/ 4P) for thermistor (TH2/ TH5)<br>CNP (Blue/ 3P) for drain pump<br>CN4F (White/ 4P) for float switch<br>CN01 (Black/ 5P) for earth and reactor<br>CNV (White/ 20P) for vane motor<br>(4) Remove the 6 supports from indoor controller board.<br>(5) Remove the indoor controller board. | **Photo 2**<br>  <br> |
| **4. Removing the electrical box**<br>(1) Remove the air intake grille and the filter. (See Figure 1)<br>(2) Remove the 2 screws from the electrical box cover.<br>(3) Disconnect the connectors. (Refer to 3.)<br>(4) Remove 2 electrical box fixing screws and remove 2 hooks.<br>(5) Pull the electrical box.<br><Electrical parts in the electrical box><br>Indoor controller board<br>Terminal block (TB4)(TB5) | |

| OPERATING PROCEDURE | PHOTOS & ILLUSTRATIONS |
|---|---|
| **5. Removing the fan and fan motor (MF)**<br>(1) Remove the electrical box. (See photo 2)<br>(2) Remove the bell mouth (3 screws). (See photo 2)<br>(3) Remove the turbo fan nut.<br>(4) Pull out the turbo fan.<br>(5) Remove the wire cover (3 screws).<br>(6) Remove 2 wiring clamps.<br>(7) Disconnect the connector of the fan motor (CNMF).<br>(8) Remove the 3 nuts and washers and rubber mounts of the fan motor. | **Photo 3**<br>  <br> |
| **6. Removing the panel**<br>(1) Remove the air intake grille and the filter. (See figure 1)<br>(2) Disconnect the connector CNV (White/ 20P).<br>**Corner panel (See figure 2)**<br>(3) Remove the corner screw.<br>(4) Slide the corner panel to the direction of the arrow ①, and remove the corner panel.<br>**Panel (See photo 4, 5)**<br>(5) Remove the 2 screws from the panel which fixes the oval holes.<br>(6) Rotate the panel a little to come to the bell shaped hole where the screw is large and remove the panel. | **Figure 2**<br>  <br><br>**Photo 4**<br>  <br><br>**Photo 5**<br>  <br> |
| **7. Removing the drain pan**<br>(1) Remove the air intake grille and the filter. (See Figure 1)<br>(2) Remove the 2 screws from the electrical box cover.<br>(3) Disconnect the connectors. (Refer to 3.)<br>(4) Remove the panel. (See photo 4, 5)<br>(5) Remove the electrical wiring service panel (3 screws).<br>(6) Remove the drain pump wire cover (1 screw).<br>(7) Remove the electrical box. (See photo 2)<br>(8) Remove the bell mouth. (See photo 2)<br>(9) Remove the 4 screws and pull out the drain pan.<br>※ Pull out the left and right of the pan gradually.<br>Be careful not to crack or damage the pan. | **Photo 6**<br>  <br> |
| **8. Removing the pipe temperature thermistor (TH2) and condenser evaporator temperature thermistor (TH5)**<br>(1) Remove the drain pan. (See photo 6)<br>(2) Remove the turbo fan. (See photo 3)<br>(3) Remove the 2 wiring clamps. (See photo 3)<br>(4) Remove the coil plate (2 screws).<br>(5) Remove the thermistors which are inserted into the holders installed to the thin copper pipe.<br>(6) Disconnect the 4-pin white connector (CN44). | **Photo 7**<br>  <br> |

| OPERATING PROCEDURE | PHOTOS & ILLUSTRATIONS |
|---|---|
| **9. Removing the drain pump (DP) and float switch (FS)**<br>(1) Remove the drain pan. (See photo 6)<br>(2) Cut the hose band and remove the hose.<br>(3) Remove the drain pump assembly (3 screws and 2 hooks).<br>(4) Remove the drain pump (3 screws).<br>(5) Remove the float switch (2 screws). | **Photo 8**<br>  <br> |
| **Photo 9**<br>  <br> | |
| **10. Removing the heat exchanger**<br>(1) Remove the drain pan. (See photo 6)<br>(2) Remove the 3 screws of the piping cover, and pull out piping cover.<br>(3) Remove the 2 screws of coil plate.<br>(4) Remove the 2 screws of the coil.<br>(5) Remove the screw of the coil support.<br>(6) Pull out the heat exchanger. | **Photo 10**<br>  <br> |

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